No: 2024-2256

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

LARRY GOLDEN
Plaintiff-Appellant

v.

The United States
Defendant-Appellee

ON APPEAL FROM THE UNITED STATES COURT OF FEDERAL CLAIMS IN GOLDEN v. THE UNITED STATES [DEFENSE THREAT REDUCTION AGENCY] IN 1:2023cv00811-EGB; JUDGE ERIC BRUGGINK

PLAINTIFF-APPELLANT'S INFORMAL REPLY IN SUPPORT OF PLAINTIFF-APPELLANT'S SECOND INFORMAL BRIEF

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MEMORANDUM REPLY IN SUPPORT OF GOLDEN'S INFORMAL BRIEF

Judge Susan Braden; in the lead case *Golden v. US* CFC Case No. 13-307C: "Memorandum Opinion and Order Granting-In-Part and Denying-In-Part the Government's Motion for Partial Dismissal" Dkt. 130 Filed: March 29, 2018, issued this opinion to establish jurisdiction of the U.S. Court of Federal Claims to adjudicate the Government's requested and solicited consumer devices (i.e., cell phones, smartphones, tablets, laptops) as products made 'for the benefit of the Government', or whether the requested and solicited consumer devices are the private property of the private entities Apple, Samsung, LG, Qualcomm, etc. ***(Appx. I)***

Jurisdiction of the U.S. Court of Federal Claims to Adjudicate the Private Property of the Privates Entities

Judge Susan Braden ruled in the lead case *Golden v. US* CFC Case No. 13-307C, Dkt. 130, the Court of Federal Claims does not have *Jurisdiction* to adjudicate patent infringement claims under 28 U.S.C. § 1498 against the Private Entities' Apple, Samsung, LG, and Qualcomm; and their private property of smartphones, tablets, and laptops: ***(Appx. I)***

> "On December 16, 2016, the court issued a Discovery Order allowing the parties to exchange jurisdictional discovery. ECF No. 97. *See Moyer v. United States*, 190 F.3d 1314, 1318 (Fed. Cir. 1999) ("Fact-finding is proper when considering a motion to dismiss where the jurisdictional facts in the complaint ... are challenged."); *see* also *Ferreira v. United States*, 350 F.3d 1318, 1324 (Fed. Cir. 2003) (the trial court "may weigh relevant evidence when it considers a motion to dismiss that challenges the truth of jurisdictional facts alleged in a complaint"). The May 25, 2017 Order [] stated that "Plaintiff may amend his complaint and claim chart [], prior to the court's ruling on jurisdiction."
>
> "As a threshold matter, the court must consider jurisdiction before reaching the substantive merits of a case. *See Gonzalez v. Thaler*, 565 U.S. 134, 141 (2012) ("When a requirement goes to subject-matter jurisdiction, courts are obligated to consider *sua sponte* issues that the parties have disclaimed or have not presented.)."
>
> "The United States Court of Federal Claims has jurisdiction to adjudicate patent infringement allegations against the Government alleging that "an invention described in and covered by a patent of the United States is used or manufactured

by or for the United States without license of the owner thereof or lawful right to use or manufacture the same." 28 U.S.C. § 1498(a). In this context, "the use or manufacture of [a patented] invention . . . by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States." *Id.* Accordingly, the United States Court of Federal Claims has jurisdiction to adjudicate patent infringement allegations against the Government "arising upon either ... of ... two grounds: (1) unlicensed use or manufacture of a patented invention by the [Government] directly; and/or (2) unlicensed use or manufacture of a patented invention for the [Government] and with [the Government's] authorization or consent." *Hughes Aircraft Co.*, 534 F.2d at 897. As to the second basis for jurisdiction, 28 U.S.C. § 1498(a) "sets forth a two-part test for determining whether th[e] court has jurisdiction ... over a particular [allegation]." *Id*

"Under this test, a finding of jurisdiction is conditioned upon a showing that[:] (1) the accused use or manufacture was undertaken for the Government, i.e., for the Government's benefit; and (2) the Government gave its authorization or consent for the accused use or manufacture." *Id* at 897-98."

"The Government argues that patent infringement allegations "relating generally to smartphones and other consumer devices" should be dismissed under RCFC 12(b)(1), because the [] Complaint "fails to sufficiently allege actual 'use' by the [G]overnment of the various combinations of consumer devices, nor would the [G]overnment's use be plausible." 10/20/17 Gov't Mot. at 17. The paragraphs in the [] Complaint that include patent infringement allegations "relating generally to smartphones and other consumer devices" are: ¶¶ 96-97, 101-02, 106-07, 111-12, 116-17, 121-22, 126-27, 131-32, 136-37, 141-42, 146-47, and 151-52."

"The [] Complaint includes patent infringement allegations concerning the Government's alleged "use" and "manufacture" of other "smartphones [and] consumer devices," each of which repeats the text of 28 U.S.C. § 1498(a) in conclusively alleging that, "[a]s a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78) ... the United States has used, authorized the use, and manufactured ... Plaintiffs inventions[.]'" 8/10/17 Am.

Compl. ¶¶ 97, 102, 107, 112, 117, 122, 127, 132, 137, 142, 147, 152. To support this allegation, the [] Complaint repeatedly cites to ¶¶ 49-78 of the [] Complaint. These paragraphs describe the Government's intent to "allow" or "approve" the "use" of various "smartphones and other consumer devices," e.g., "the iPhone 5c and 5s." 8/10/17 Am. Compl. ¶ 75."

"The [] Complaint, however, does not allege that the Government's intent to "allow" or "approve" the use of "smartphones and other consumer devices" infringes Plaintiffs patents. Instead, the [] Complaint alleges that the Government's use of these devices in combination with other "devices" or "programs," e.g., the "'Cell-All initiative'," infringes Plaintiffs patents. 8/10/17 Am. Compl. ¶¶ 96-97. No factual allegations, however, support assuming that the Government used or authorized the use of these other "devices" [] to infringe Plaintiffs patents."

"For example, although the [] Complaint alleges that the "LG Electronics GS Smartphone . . . can be used" by the Government, such an allegation does not support the conclusion that the Government used or authorized the use of these devices to run the "'*Cell-All*' initiative." 8/10117 Am. Compl. ¶¶ 96-97. Nor do such allegations imply that the Government's use of the "LG Electronics GS Smartphone" infringes Plaintiffs patents, since the Government may simply use these devices to make calls. Without supporting factual allegations, however, the court cannot assume infringing use or manufacture by the Government. See *Norton, 266* U.S. at 515" … "In sum, although the factual allegations of the [] Complaint may support a conclusion that the Government "allowed" or "approved" the "use" of various "smartphones and other consumer devices," they do not support the conclusion that the Government used or authorized the use of these devices in an infringing manner."

"For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 96-97, 101-02, 106-07, 111-12, 116-17, 121-22, 126-27, 131-32, 136-37, 141-42, 146-47, and 151-52 of the August 10, 2017 [] Complaint failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these paragraphs of the [] Complaint must be dismissed under RCFC 12(b)(l)."

"In the alternative, the Government argues that the same allegations should be dismissed under RCFC 12(b)(6), for "improperly alleg[ing] infringement by or for the Government in irreconcilably vague and omnibus fashion by repeatedly citing 'contracts, agreements, and procurements with various Government Agencies.'" 10/20/17 Gov't Mot. at 17."

"The [] Complaint fails to identify the "contracts, agreements, and procurements" at issue. Without more, the [] Complaint has not met the requirements of *Twombly* and *Iqbal*. Nor does the [] Complaint provide anything other than conclusory allegations that the Government used or authorized the use of "smartphones and other consumer devices" in a manner that infringes Plaintiff's patents. Such "[t]hreadbare recitals of the elements of a cause of action, supported by mere conclusory statements, [however,] do not suffice." *Iqbal*, 556 U.S. at 678; *see also Sioux Honey Ass'n*, 672 F.3d at 1062 (holding that a complaint "require[s] more than labels and conclusions")."

Judge Susan Braden in the lead case *Golden v. US* CFC Case No. 13-307C, ruled the U.S. Court of Federal Claims does not have Jurisdiction Under 28 U.S.C. § 1498(a) to Adjudicate Patent Infringement Allegations Concerning [] Cooperative Agreements

In Judge Braden's "Memorandum Opinion and Order Granting-In-Part and Denying-In-Part the Government's Motion for Partial Dismissal" Dkt. 130 Filed: March 29, 2018, the Judge determined the United States Court of Federal Claims does not have jurisdiction to adjudicate the "cooperative agreements" of the private entities Apple, Samsung, LG, and Qualcomm.

"S&T is pursuing what's known as cooperative research and development agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. These written agreements, which bring together a private company and a government agency for a specific project, often accelerate the commercialization of technology developed for government purposes. As a result, 'Dennis hopes to have 40 prototypes in about a year, the first of which will sniff out carbon monoxide and fire' … 'Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster. If it's not already the case, our smartphones may soon be smarter than we are.' DHS S&T Directorate BAA07-10 *"Cell-All Ubiquitous*

Biological & Chemical Sensing" initiative": https://www.dhs.gov/archive/cell-all-super-smartphones-sniff-out-suspicious-substances

According to Judge Braden, the private companies Apple, Samsung, LG and Qualcomm that was brought together to accelerate the commercialization of the cell phone sensing devices' technology developed for government purposes, does not have jurisdiction in the United States Court of Federal Claims because "any benefit to the Government, at best, would be incidental", and "none of the [] cooperative agreements evidence any "express or implied authorization and consent by the [G]overnment." Judge Braden is quoted as saying: ***(Appx. I)***

> "A private party's "use or manufacture" of a claimed invention will be considered a "use or manufacture for the Government" if the use or manufacture is: (1) for the benefit of the Government; and (2) with the Government's "authorization or consent." 10/20/17 Gov't Mot. at 7 (citing *Carrier Corp. v. United States*, 534 F.2d 244, 249 (Ct. Cl. 1976)). Regarding the "first requirement," private conduct incidentally benefitting the Government does not constitute use "for the benefit of the Government." 10/20/17 Gov't Mot. at 7 (citing *Sheridan v. United States*, 120 Fed. CL 127, 131 (Fed. CL 2015) ("Where benefits to the Government are merely an incidental effect of private conduct, they do not constitute 'use or manufacture for the Government, [under] § 1498'.")).
>
> "The court does not have jurisdiction under 28 U.S.C. § 1498(a) to adjudicate patent infringement allegations concerning [] cooperative agreements, because any benefit to the Government, at best, would be incidental. 10/20/17 Gov't Mot. at 10-16. In addition, none of the grants or cooperative agreements evidence any "express or implied authorization and consent by the [G]overnment." 10/20/17 Gov't Mot. at 11, 16."
>
> "Although the cooperative agreements may involve a measure of Government involvement, they do not contain any text evidencing Government "authorization [or] consent to infringe another's patent." 10/20/17 ...
>
> "The Government also argues that the [] Complaint's "allegations relating generally to smartphones and other consumer devices should be dismissed" under RCFC 12(b)(1) and 12(b)(6), because they fail to allege "actual 'use' by the [G]overnment of the various combinations of consumer devices, nor would the

> [G]overnment use be plausible." 10/20/17 Gov't Mot. at 16-17. In addition, the [] Complaint "fails to allege that any of these various consumer devices were made for the benefit of the [G]overnment. 10/20/17 Gov't Mot. at 17."
>
> "The companies referenced [Apple, Samsung, LG, and Qualcomm] in the [] Complaint 'manufacture, develop, and commercialize their devices in their own economic self-interest.' 10/20/17 Gov't Mot. at 17."

The Doctrine of *Horizontal Stare Decisis*

Judge Bruggink of the Court of Federal Claims failed to adhere to the prior Claims Court decision made in the same lead case no. 13-307C on the Courts jurisdiction to adjudicate third-party contractors for alleged patent infringement; private entities performing work under cooperative agreements; and private entities manufacturing, developing, and commercializing [] consumer devices in their own economic self-interest.

The Senior Judge Bruggink redirected and broadened the jurisdiction of the Claims Court by narrowing the case to a dispute between two private entities under 35 U.S.C. § 271(a); Golden and Apple, Inc. "[P]roving direct infringement under 35 U.S.C. § 271(a) is not a necessary predicate for proving direct infringement under 28 U.S.C. § 1498(a)." *Zoltek V*

When Senior Judge Bruggink redirected and broadened the jurisdiction of the Claims Court by narrowing the case to a dispute between the two private entities, [Golden and Apple, Inc.], Senior Judge Bruggink personally destroyed any and all possibilities of Golden proving, under § 1498(a), that Golden's patented invention(s) were made by the combined efforts of the third-party contractors, in the lead case no. 13-307C, until the invention was "suitable for use".

On June 5, 2018, in *FastShip, LLC v. United States*, the US Court of Appeals for the Federal Circuit affirmed … a US Court of Federal Claims interpreted the term "manufactured" as used in 28 U.S.C. Section 1498, which waives the US government's sovereign immunity and provides a remedy whenever a patented invention is used or manufactured by or for the government without a license from the patent owner, to require the accused product to include each asserted claim limitation so it is "suitable for use" ((Fed. Cir. June 5, 2018)).

Judge Bruggink forced Golden into proving direct infringement under 35 U.S.C. § 271(a) as a necessary predicate for proving direct infringement under 28 U.S.C. § 1498(a)." *Zoltek III*; overturned in *Zoltek V*.

GOLDEN'S PATENTED INVENTION(S) CANNOT BE APPROPRIATED OR USED BY THE GOVERNMENT ITSELF, WITHOUT JUST COMPENSATION
(*James v. Campbell* Supreme Court 104 U.S. 356, 357-58 (1882))

The DHS Science and Technology Directorate (S&T); the DOD Defense Threat Reduction Agency (DTRA); and the DOD Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense (JPEO-CBRND), cannot continue to use Golden's patented inventions without paying just compensation:

> *"In James v. Campbell, 104 U.S. 356, 357-58 (1882), the Supreme Court explained that when the government grants a patent, it "confers upon the patentee an exclusive property in the patented invention which cannot be appropriated or used by the government itself, without just compensation."*

DHS S&T "*Cell-All*"

Spearheaded by DHS S&T, *Cell-All* equips cell phones with a sensor capable of detecting deadly chemicals … In 2007, S&T called upon the private sector to develop concepts of operations. To this end, teams from Qualcomm, NASA, Synkera, SeaCoast, and Rhevision Technology begin perfecting CBRNE sensing, data transfer, and wireless "***ubiquitous***" network connectivity. DHS S&T entered into cooperative research and development agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. These written agreements, which bring together a private company and a government agency for a specific project, accelerated the commercialization of technology developed for government purposes. ***(Appx. II)***

Golden alleges the DHS continues to allow Qualcomm to appropriate and use Golden's patented inventions of a CMDC device, CPU, and Detection device, without compensation.

DoD DTRA ATAK

The Android Team Awareness Kit (ATAK) is an Android smartphone geospatial infrastructure and military situation awareness app for Google, Samsung, LG, Qualcomm, etc. ATAK has a CBRNE plugin architecture which allows developers to add functionality.

The TAK has various mapping applications and end-user versions such as the iTAK that is built on Apple's iOS operating system; ATAK that is built on Google's android open-source operating system; and, WinTak that is built on Microsoft's operating system. ***(Appx. III)***

Also, the ATAK itself has various end-user versions: ATAK - Civilian (ATAK-CIV); ATAK - Government (ATAK-GOV); and, ATAK - Military (ATAK-MIL). See chart Below:

iTAK	ATAK				WinTAK	
Apple iPhone 12 Smartphone	Google Pixel 5 Smartphone	Samsung Galaxy S21 Smartphone	LG V60 ThinQ 5G	Qualcomm Smartphone/ Snapdragon Insiders	Samsung Galaxy Book2 Pro 360 [PC or Tablet Mode]	HP ZBook Fury G8 Mobile PC Workstation
						

The DoD DTRA ATAK initiative combines Golden's patented CMDC device, CPU, and Multi-Sensor Detection device. The DoD DTRA ATAK initiative also expands "***ubiquitous***" CBRNE sensing, with the use of consumer devices *i.e.*, laptops, PCs, tablets, and smartwatches, that are covered under Golden's patents, but were not asserted in the *Cell-All* initiative.

Golden alleges the DoD DTRA continues to appropriate and use Golden's patented inventions combinations of a CMDC device, CPU, and Detection device, without compensation.

DoD "JPEO-CBRND"

Draper Laboratory has been awarded a $26 million (all options) contract by the U.S. Department of Defense (DOD) to further expand the capabilities of its unmanned autonomous systems (UAS) software to perform CBRN) reconnaissance missions.

Draper's UAS on a CBRN reconnaissance mission includes a TAK-enabled consumer [cell phone, smartphone, laptop, PC, tablet or smartwatch] device wireless "***ubiquitous***" network connectivity. Draper will advance its system under an effort at JPEO-CBRND called CSIRP, which stands for CBRN Sensor Integration on Robotic Platforms. Additional enhancements to the system will include advances in CBRN sensors. ***(Appx. IV)***

Golden alleges the DoD DTRA continues to appropriate and use Golden's patented inventions combinations of a CMDC device, CPU, Detection device, and Pre-programed Stop, Stall, Vehicle Slow-down system, without compensation. [1]

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[1] Golden has attached as ***(Appx. V)*** a copy of the proposal submitted to the Dept. of Homeland Security in 2007 in response to the *Cell-All* request for proposals. Golden's proposal describes in detail how we can deliver on the combined CMDC device, CPU, Detection device. The Pre-programed Stop, Stall, Vehicle Slow-down system was submitted to DHS Program Manager Ed Turner in early 2008 in a discussion at the DHS between Golden, Golden's Lead Engineer, and Mr. Turner. Golden's two engineers have extensive backgrounds in software development for mobile devices and autonomous vehicles.

GOLDEN'S "FOUR" PATENTED INVENTION(S) COMBINATIONS ASSERTED IN THIS CAFC CASE NO. 24-2256 *GOLDEN v. US* WAS NEVER ADJUDICATED AND THEREFORE CANNOT BE DISMISSED FOR ISSUE PRECLUSION

Golden is not "precluded" from asserting in this current case on appeal *Golden v. US* CAFC Case No. 24-2256, claim 1 of Golden's U.S. Patent "10,984,619" that was issued on April 20, 2021 for Golden's invention of "a communication device, comprising; a central processing unit (CPU); a means of CBRNE detection; and a means of stalling or stopping a vehicle". [Claim 1 of Golden's U.S. Patent "10,984,619" that was never asserted in *Golden v. US* COFC Case No. 13-307C, which means the claim cannot be dismissed for issue preclusion because the Claims Court never adjudicated the claim for validity or construed the claim].

Golden is not "precluded" from asserting in this current case on appeal *Golden v. US* CAFC Case No. 24-2256, claim 11 of Golden's U.S. Patent "10,984,619" that was issued on April 20, 2021 for Golden's invention of "a central processing unit (CPU); integrated with a communication device that is capable of CBRNE detection; and capable of processing instructions for stalling or stopping a vehicle". [Claim 11 of Golden's U.S. Pat. "10,984,619" was never asserted in *Golden v. US* COFC Case No. 13-307C, which means the claim cannot be dismissed for issue preclusion because the Court never construed or adjudicated the claim].

Golden is not "precluded" from asserting in this current case on appeal *Golden v. US* CAFC Case No. 24-2256, claim 1 of Golden's U.S. Patent "11,645,898" that was issued on May 9, 2023 for Golden's invention of "a pre-programmed stall, stop, vehicle slow-down system; comprising a communication device: a central processing unit (CPU); and a means of processing instructions for stalling or stopping a vehicle when CBRNE is detected". [Claim 1 of Golden's U.S. Patent "11,645,898" that was not issued before the close of *Golden v. US* COFC Case No. 13-307C, which means the claim cannot be dismissed for issue preclusion].

Golden is not "precluded" from asserting in this current case on appeal *Golden v. US* CAFC Case No. 24-2256, claim 6 of Golden's U.S. Patent "10,163,287" that was issued on December 25, 2018 for Golden's invention of "[] monitoring equipment, comprising; a communication device; a central processing unit (CPU); a means of CBRNE detection; and a means of stalling or stopping a vehicle". See the following chart.

Golden is not "precluded" from asserting in this current case on appeal *Golden v. US* CAFC Case No. 24-2256 claim 1 of Golden's U.S. Patent "9,589,439". ***(Appx. VI)***

THE GOVERNMENT'S REQUEST FOR ***FOUR*** OF GOLDEN'S PATENTED INVENTION(S) COMBINATIONS – PATENT CLAIMS				
Patent Claims *-for-* Patented Inventions	**Claim 1 of U.S. Patent "10,984,619"**	**Claim 11 of U.S. Patent "10,984,619"**	**Claim 1 of U.S. Patent "11,645,898"**	**Claim 6 of U.S. Patent "10,163,287"**
Communication Device CMDC Device(s) i.e., Smartphones, PCs, Laptops, Tablets, Monitoring Equipment and Cell-phone Detection Devices	**A communication device that is at least a personal computer (PC), a cellphone, a smartphone, a laptop, or a handheld scanner,**	whereupon, the central processing unit (CPU) of the communication device is capable of processing instructions for operational and functional execution,	processing instructions to stall, stop, or slow-down a vehicle [] receives a signal from [] (PC), … a smartphone, a laptop, a tablet, a PDA, or a handheld;	[] communication with [] one CPU configured to send signals … communication device [] capable of communicating, monitoring, detecting, and controlling.
Central Processing Unit (CPU) CPU / Processor / Chipset / SoC	comprising at least a central processing unit (CPU), capable of:	**A central processing unit (CPU) of … a … (PC), a cellphone, a smartphone, a laptop, or a handheld scanner, …:**	Wherein, when the [] (CPU) processes instructions to stall, stop, or slow-down a vehicle, … is sent [] monitoring site	at least one central processing unit (CPU)
Detection Device Placed In, On, Upon, Adjacent the CMDC Device(s)	processing instructions to [] detect [] chemical [], biological [], radiological [], nuclear [], or explosive [], … (WMDs);	processing instructions to [] detect [] chemical [], biological [], radiological [], nuclear [], or explosive [], … (WMDs);	processing instructions to stall, stop, or slow-down a vehicle when … chemical [], a biological [], a radiological []; a nuclear []; or explosives [] detected;	**A monitoring equipment, comprising… detecting at least … chemical, biological, radiological, or explosive agents;**
Stall, Stop, Vehicle Slow-Down System Remote, Cellular, Satellite, Pre-Programmed	processing instructions to activate a start, stall, stop, or disabling means by engaging a vehicle's ignition system;	processing instructions to activate a start, stall, stop, or disabling means by engaging a vehicle's ignition system;	**A pre-programmed stall, stop, vehicle slow-down system, … processing instructions to … vehicle when … driverless []; self-drive []; an[d] autonomous …**	at least one of a transmitter or a transceiver … at least one CPU configured to … monitor … a vehicle, or [] send signals to control components of a vehicle…

THE GOVERNMENT WORSENING OF EARLIER CONDITIONS

The United States Court of Federal Claims ["the Government's Court] Judge, was "*precluded*" under 28 U.S. Code § 144 - Bias or prejudice of judge, from adjudicating the current case and entering a final decision. Golden filed a timely motion for disqualification under 28 U.S. Code § 144 for racial bias and bias in favor of the Government that the Judge ignored and allowed to set on the docket for seven months.

The Government is "*precluded*" by the United States Supreme Court from appropriating or using Golden's patented invention(s) without just compensation: "In *James v. Campbell*, 104 U.S. 356, 357-58 (1882), the Supreme Court explained that when the government grants a patent, it "confers upon the patentee an exclusive property in the patented invention which cannot be appropriated or used by the government itself, without just compensation."

The Government is "*precluded*" by the Fifth Amendment Clause of the United States Constitution from depriving Golden of his property without paying just compensation: "No person shall … be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation." [U.S. Cons't. amend. V]

The United States Court of Federal Claims ["the Government's Court] is "*precluded*" by the Tucker Act (March 3, 1887, ch. 359, 24 Stat. 505, 28 U.S.C. § 1491) from adjudicating outside the Court's jurisdiction Golden's money-mandating claims against the Government: "While the Tucker Act confers jurisdiction on the Court of Federal Claims and … authorizes money claims against the government "founded either upon the Constitution, or any Act of Congress, or any regulation of an executive department, or upon any express or implied contract with the United States . . . The statute provides the right to file a lawsuit to obtain a monetary remedy, while leaving the content of the legal claim to the Constitution…"

The Government is "*precluded*" by Title 28 of the United States Code; Section 1498 from using or manufacturing Golden's inventions without license; the lawful right; or reasonable and entire compensation: "Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture… the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any

person, firm, or corporation for the Government and with the authorization or consent, shall be construed as use or manufacture for the United States." [28 U.S. C § 1498(a)]

The Government is "*precluded*" by the Federal Circuit in *Zoltek V* from requiring Golden to prove direct infringement of Apple and Google products under 35 U.S.C. § 271(a) as a necessary predicate to proving direct infringement by or for the Government under 28 U.S.C. § 1498(a): "[I]n the 2012 *en banc* decision *Zoltek V*, the Federal Circuit abrogated *Zoltek III*, holding that establishing conduct falling within the definition of direct infringement codified in 35 U.S.C. § 271(a) is not a predicate to finding infringement under § 1498(a)… In *Zoltek V*, the appellate court emphasized that § 1498(a) is "its own independent cause of action" with three elements to trigger government liability: (1) the invention must be claimed in a patent; (2) it must be "used or manufactured by or for the United States," []; and (3) the "use or manufacture" of the patented invention must be done without license or lawful right—i.e., "use of an invention that, if done by a private party, would directly infringe the patent."

The Government is "*precluded*" by the Bayh-Dole Act, from extending its license to practice Golden's inventions for commercial use by third-parties to compete with Golden on the open market: "While the Government retains a royalty-free license under the Bayh–Dole to practice the invention under the Bayh–Dole Act, the right is limited to practice "for or on behalf of the United States." Therefore, the license does not extend to commercial use by third parties. For example, the government's license could not be used to allow a third party to practice the inventing party's invention and thereby compete with the inventing party on the open market."

The Government is "*precluded*" by the US Court of Appeals for the Federal Circuit from limiting or restricting the components [elements] of the alleged infringing products to those "*native*" to the manufacture of the Apple and/or Google products: "In *FastShip, LLC v. United States*, the US Court of Appeals for the Federal Circuit held that to be manufactured under 28 U.S.C. Section 1498, an accused product must include each claim limitation so it is "suitable for use" … [T]he Federal Circuit interpreted the term "manufactured" in Section 1498:

- According to its ordinary, contemporary, common meaning, ruling that the plain meaning of "manufactured" encompasses products made or worked into a form that is suitable for use.
- In the context of the overall statutory scheme, concluding that interpreting "manufactured" so the product must be suitable for use aligns with the Federal Circuit's prior interpretation of "use" in Section 1498 requiring each claim limitation to be present in the thing invented.

The Government is "*precluded*" by the United States Supreme Court from extending the preclusion doctrines to include a new freestanding preclusion doctrine—the *Kessler* Doctrine: "In May 2020, the Supreme Court decided the case of *Lucky Brand Dungarees, Inc. v. Marcel Fashions Grp., Inc.*, 140 S. Ct. 1589 (2020) and expressly refused to extend preclusion doctrines beyond their traditional bounds set by the doctrines of issue and claim preclusion. The Supreme Court has repeatedly held that, absent guidance from Congress, courts should not create special procedural rules for patent cases or devise novel preclusion doctrines that stray beyond the traditional bounds of claim and issue preclusion. Nonetheless, over the past several years, the Federal Circuit has created and then repeatedly expanded a special, patent-specific preclusion doctrine that it attributes to the Supreme Court's 114-year-old decision in *Kessler v. Eldred*, 206 U.S. 285 (1907)—a case the Court has not cited for almost 70 years.

Absent guidance from Congress, the Government in this case has devised a way to stray beyond the traditional bounds of claim and issue preclusion, to create a new freestanding preclusion doctrine [*Kessler*] that may apply even when claim and issue preclusion do not. The freestanding *Kessler* doctrine does not supersede the Constitutional provisions of the Fifth Amendment "No person shall…be deprived of life, liberty, or property, without due process of law;" and the freestanding doctrine do not supersede Congress intent in creating the statute for patent infringement under 28 U.S.C. § 1498(a).

The United States Court of Federal Claims ["the Government's Court] is "*precluded*" by the doctrine of vertical stare decisis from dishonoring the precedence set by the higher United States Court of Appeals for the Federal Circuit in two separate cases within the Federal Circuit's jurisdiction: "Vertical stare decisis is the rule binding a lower court to adhere to the decisions of higher courts in its jurisdiction. Under the doctrine vertical stare decisis it is a court's obligation to follow the precedence of a superior court; and, under the doctrine horizontal stare decisis, a court's obligation to follow its own precedence. Vertical stare decisis is an inflexible rule that admits of no exception. *See Rodriguez de Quijas v. Shearson/Am. Express, Inc.*, 490 U.S. 477, 484 (1989). See chart below:

- The United States Court of Appeals for the Federal Circuit Judges in *Golden v. Google, LLC*, Case No. 22-1267; determined Direct Infringement by or for the Government, arises when there's a combined ATAK Software; CBRN Plugins; CPU; and Smartphone

- The United States Court of Appeals for the Federal Circuit Judges in *Golden v. Samsung* Case No. 23-2120; agreed with the Northern District of California Court Judge in *Golden v. Samsung* that Direct Infringement by or for the Government arises when there's a combined ATAK Software; CBRN Plugins; CPU; and Smartphone

In *Golden v. Samsung Electronics America, Inc.* Case No. 23-0048; and in *Golden v. Google LLC* Case No. 22-5246 the Courts determined, "direct infringement by or for the Government arises when there's the combined ATAK Software; CBRN Plugins; CPU; and Smartphone.

This determination was made after the decision in the lead case *Golden v. USA* no. 13-307C on 11/10/2021. Therefore, dismissing for issue preclusion is perceived as moot. The dismissal of this current case *Golden v. Google* No. 23-811C on appeal is not "on the merits" if the dismissal is for issue preclusion of a case perceived as *moot*, and higher Courts decided in the opposite.

Also, the decisions of the higher United States Court of Appeals for the Federal Circuit made in *Golden v. Google LLC* Case No. 22-1267 and in *Golden v. Samsung Electronics America, Inc.* Case No. 23-2120 that was decided, "direct infringement by or for the Government arises when there's the combined ATAK Software; CBRN Plugins; CPU; and Smartphone", is binding precedence under the doctrine of *vertical stare decisis*. The United States Court of Federal Claims is duty bound to attempt faithfully to apply the precedents of the Federal Circuit.

# of Judge(s)	**Case Number**	**Case Title**	**Court**	**Filed - Closed**
Judge Bruggink	1:2013cv00307	Golden v. USA	U.S. Court of Federal Claims	05/01/2013 - ***11/10/2021***
# of Judge(s)	**Case Number**	**Case Title**	**Court**	**Filed - Closed**
Three Appellate Judges	2022cvpri01267	Golden v. Google LLC	U.S. Court of Appeals, Fed. Cir.	12/16/2021 - ***09/08/2022***
One District Judge	3:2023cv00048	Golden v. Samsung Electronics America, Inc.	California Northern District Court	01/05/2023 - ***06/08/2023***
Three Appellate Judges	2023cvpri02120	Golden v. Samsung Electronics America, Inc.	U.S. Court of Appeals, Fed. Cir.	07/07/2023 - ***02/12/2024***
One District Judge	3:2022cv05246	Golden v. Google LLC	California Northern District Court	09/14/2022 - ***04/03/2024***
One District Judge	3:2022cv05246	Golden v. Google LLC	California Northern District Court	09/14/2022 - ***04/03/2024***

CONCLUSION

The Government is "*precluded*" by the Courts from dismissing Golden's case solely on mootness grounds; which is not a final judgment "on the merits". "A party may raise a mootness challenge at any time during the litigation, including for the first time on appeal. *DBSI/TRI IV Ltd. P'ship v. United States*, 465 F.3d 1031, 1038 (9th Cir. 2006) (explaining that mootness is a "jurisdictional issue that may be raised at any time, even for the first time on appeal").

According to Judge Braden, in the same lead case *Golden v. US* No. 13-307C, the smartphones of the OEMs Apple, Samsung, LG, and Qualcomm are the private property of the private entities. Judge Bruggink, therefore, was outside the CFC's jurisdiction to force Golden to prove direct infringement under 35 U.S.C. § 271(a) as a necessary predicate to proving direct infringement under 28 U.S.C. § 1498(a). [*Zoltek III*; overturned in *Zoltek V*].

Judge Bruggink wasted years of the Court's time forcing a dispute between two private entities [Golden and Apple]. The United States and Judge Bruggink will have the Appellate Court believe this current case is a dispute between the two private entities Golden and Google, when it is not. A dispute between Golden and Google is outside the CFC's jurisdiction.

Here, the prior judgment, though challenged on appeal, was dismissed on "*mootness*" grounds. A dismissal solely on mootness grounds does not result in a final judgment "on the merits" as required to apply the doctrine of *res judicata*. Published opinion in *Parkford Owners for a Better Community v. Windeshausen* (D3 Jul. 14, 2022 No. C094419) 81 Cal.App.5th 216.

Sincerely,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that on this 13th day of December, 2024, a true and correct copy of the foregoing "Plaintiff-Appellant's Informal Reply in Support of Plaintiff-Appellant's Second Informal Brief", was served upon the following Defendant by priority "express" mail:

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Appendix I

In the United States Court of Federal Claims

No. 13-307C
Filed: March 29, 2018

****
*
LARRY GOLDEN,
*
Plaintiff, *pro se*,
*
v.
*
THE UNITED STATES,
*
Defendant.
*
****

45 C.F.R. § 75.435(h) (Uniform Administrative Requirements);
48 C.F.R. § 2.101(b) (Federal Acquisition Regulations Definitions);
28 U.S.C. §§ 1491(a) (Tucker Act Jurisdiction), 1498(a) (Patent Infringement Jurisdiction), 1927 (Liability for Excessive Costs);
31 U.S.C. §§ 6303 (Using Procurement Contracts), 6304 (Using Grant Agreements), 6305 (Using Cooperative Agreements);
35 U.S.C. §§ 102 (Novelty), 103 (Obviousness), 111(a),(b) (Application for Patent), 120 (Benefit of Earlier Filing Date), 251 (Reissue of Defective Patents), 252 (Effect of Reissue);
Manual of Patent Examining Procedure (9th ed. 2015); and
Rule of the United States Court of Federal Claims 12(b)(1) (Jurisdiction), 12(b)(6) (Failure to State a Claim), 12(h)(3) (Lack of Subject-Matter Jurisdiction), 15(a) (Amendments Before Trial), 41(b) (Dismissal of Actions), 56(e), (f) (Summary Judgment).

Larry Golden, Greenville, South Carolina, *pro se*.

Nicholas Jae-Ryoung-Kim, United States Department of Justice, Civil Division, Washington, D.C., Counsel for the Government.

MEMORANDUM OPINION AND ORDER GRANTING-IN-PART AND DENYING-IN-PART THE GOVERNMENT'S MOTION FOR PARTIAL DISMISSAL

BRADEN, *Chief Judge*.

To facilitate review of this Memorandum Opinion And Order, the court has provided the following outline.

e. Patent Infringement Allegations Concerning Broad Agency Announcements Must Be Dismissed Under RCFC 12(b)(6).

f. Patent Infringement Allegations Concerning The '033 Patent Must Be Dismissed Under RCFC 12(b)(1).

g. Patent Infringement Allegations Concerning Unissued Patent Applications And Pre-Issuance Use Or Manufacture Must Be Dismissed Under RCFC 12(b)(1).

h. Patent Infringement Allegations Concerning The '761, '280, And '189 Patents Must Be Dismissed Under RCFC 12(b)(6).

V. CONCLUSION.

I. RELEVANT FACTUAL BACKGROUND.[1]

A. The Prosecution History Of The Relevant United States Patent Applications.

On April 5, 2006, Larry Golden filed U.S. Patent Application No. 11/397,118 (the "'118 Application"), entitled "Multi Sensor Detection And Lock Disabling System," with the United States Patent and Trademark Office (the "USPTO").[2] 2/12/16 Am. Compl. Ex. B. The '118 Application "pertain[ed] to anti-terrorist detection and prevention systems, and more particularly pertain[ed] to a disabling lock mechanism combined with a chemical/biological/radiological detection system for use with products grouped together by similar characteristics in order to prevent unauthorized entry, contamination[,] and terrorist activity." 2/12/16 Am. Compl. Ex. B.

On June 6, 2008, Mr. Golden filed a continuation-in-part[3] of the '118 Application, U.S. Patent Application No. 12/155,573 (the "'573 Application"). 2/12/16 Am. Compl. Ex. C.

On June 10, 2008, the USPTO issued the '118 Application, as U.S. Patent No. 7,385,497 (the "'497 Patent"). 2/12/16 Am. Compl. Ex. B.

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[1] The relevant facts discussed herein were derived from: exhibits attached to the February 12, 2016 Amended Complaint ("2/12/16 Am. Compl. Ex. A–I"); the August 10, 2017 Fifth Amended Complaint ("8/10/17 Am. Compl."); and exhibits attached to the Government's October 20, 2017 Motion For Partial Dismissal ("10/20/17 Gov't Mot. Ex. 1–22"). *See Moyer v. United States*, 190 F.3d 1314, 1318 (Fed. Cir. 1999) ("Fact-finding is proper when considering a motion to dismiss where the jurisdictional facts in the complaint . . . are challenged."); *see also Ferreiro v. United States*, 350 F.3d 1318, 1324 (Fed. Cir. 2003) (the trial court "may weigh relevant evidence when it considers a motion to dismiss that challenges the truth of jurisdictional facts alleged in a complaint").

[2] The examination of a patent application at the USPTO

> begins with the applicant filing the application itself. . . . [T]his application can be one of two basic types. The usual course is to file a regular application[, *i.e.*, a nonprovisional application,] under [35 U.S.C. §] 111(a). The statute has been . . . amended, however, to permit the filing of a provisional application as set out in [35 U.S.C. §] 111(b). This latter form of application is not itself subject to examination, although it can be followed by a regular application within a year. The provisional application is in the nature of a domestic priority document.

R. CARL MOY, MOY'S WALKER ON PATENTS § 3:3 (4th ed. 2003).

[3] "A continuation-in-part is an application filed during the lifetime of an earlier nonprovisional application, repeating some substantial portion or all of the earlier nonprovisional application and adding matter not disclosed in the said earlier nonprovisional application." MANUAL OF PATENT EXAMINING PROCEDURE ("MPEP") § 201.08 (9th ed. 2015).

On December 22, 2009, the USPTO issued the '573 Application, as U.S. Patent No. 7,636,033 (the "'033 Patent"). 2/12/16 Am. Compl. Ex. C.

On January 20, 2010, Mr. Golden filed a continuation[4] of the '573 Application, U.S. Patent Application No. 12/657,356 (the "'356 Application"). 2/12/16 Am. Compl. Ex. D.

On May 27, 2010, Mr. Golden filed a continuation of the '356 Application, U.S. Patent Application No. 12/802,001 (the "'001 Application"). 2/12/16 Am. Compl. Ex. E.

On March 31, 2011, Mr. Golden filed a reissue application[5] of the '033 Patent, U.S. Reissue Application No. 13/065,837 (the "'837 Application"). 2/12/16 Am. Compl. Ex. G.

On September 9, 2011, Mr. Golden filed a second reissue application of the '033 Patent, U.S. Reissue Application No. 13/199,853 (the "'853 Application"). 2/12/16 Am. Compl. Ex. H.

On November 3, 2011, Mr. Golden filed a divisional application[6] of the '001 Application, U.S. Patent Application No. 13/288,065 (the "'065 Application"). 2/12/16 Am. Compl. Ex. F.

On January 31, 2012, the USPTO issued the '356 Application, as U.S. Patent No. 8,106,752 (the "'752 Patent"). 2/12/16 Am. Compl. Ex. D.

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[4] "A continuation application is an application for the invention(s) disclosed in a prior-filed copending nonprovisional application. . . . The disclosure presented in the continuation must not include any subject matter which would constitute new matter if submitted as an amendment to the parent application." MPEP § 201.07.

Although Mr. Golden filed the '356 Application as a "continuation" of the '573 Application, the '356 Application was filed after issuance of the '573 Application, *i.e.*, when the '573 Application was no longer pending. *See* 35 U.S.C. § 120 ("An application for patent for an invention disclosed . . . in an application previously filed in the United States, . . . shall have the same effect, as to such invention, as though filed on the date of the prior application, *if filed before the patenting* or abandonment of or termination of proceedings on the first application or on an application similarly entitled to the benefit of the filing date of the first application[.]" (emphasis added)); *see also* MPEP § 201.07.

[5] Defective patents may be corrected by "reissue." *See* 35 U.S.C. § 251(a) ("Whenever any patent is, through error, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Director shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent.").

[6] A divisional application is "[a] later application for an independent or distinct invention, carved out of a nonprovisional application . . . disclosing and claiming only subject matter disclosed in the earlier or parent application[.]" MPEP § 201.06.

On December 18, 2012, the USPTO issued the '001 Application, as U.S. Patent No. 8,334,761 (the "'761 Patent"). 2/12/16 Am. Compl. Ex. E.

On January 1, 2013, the USPTO issued the '837 Application, as U.S. Reissue Patent No. RE43,891 (the "'891 Patent"). 2/12/16 Am. Compl. Ex. G.

On February 12, 2013, the USPTO issued the '853 Application, as U.S. Reissue Patent No. RE43,990 (the "'990 Patent"). 2/12/16 Am. Compl. Ex. H.

On September 9, 2013, Mr. Golden filed a continuation of the '065 Application, U.S. Patent Application No. 14/021,693 (the "'693 Application"). 2/12/16 Am. Compl. Ex. I.

On September 10, 2013, the USPTO issued the '065 Application, as U.S. Patent No. 8,531,280 (the "'280 Patent"). 2/12/16 Am. Compl. Ex. F.

On July 23, 2015, Mr. Golden filed a continuation of the '693 Application, U.S. Patent Application No. 14/806,988 (the "'988 Application). 8/10/17 Am. Compl. ¶ 36; *see also* U.S. Patent No. 9,589,439.

On August 4, 2015, the USPTO issued the '693 Application, as U.S. Patent No. 9,096,189 (the "'189 Patent"). 2/12/16 Am. Compl. Ex. I.

On March 6, 2017, Mr. Golden filed a continuation of the '988 Application, U.S. Patent Application No. 15/530,839 (the "'839 Application"). 8/10/17 Am. Compl. ¶ 3.

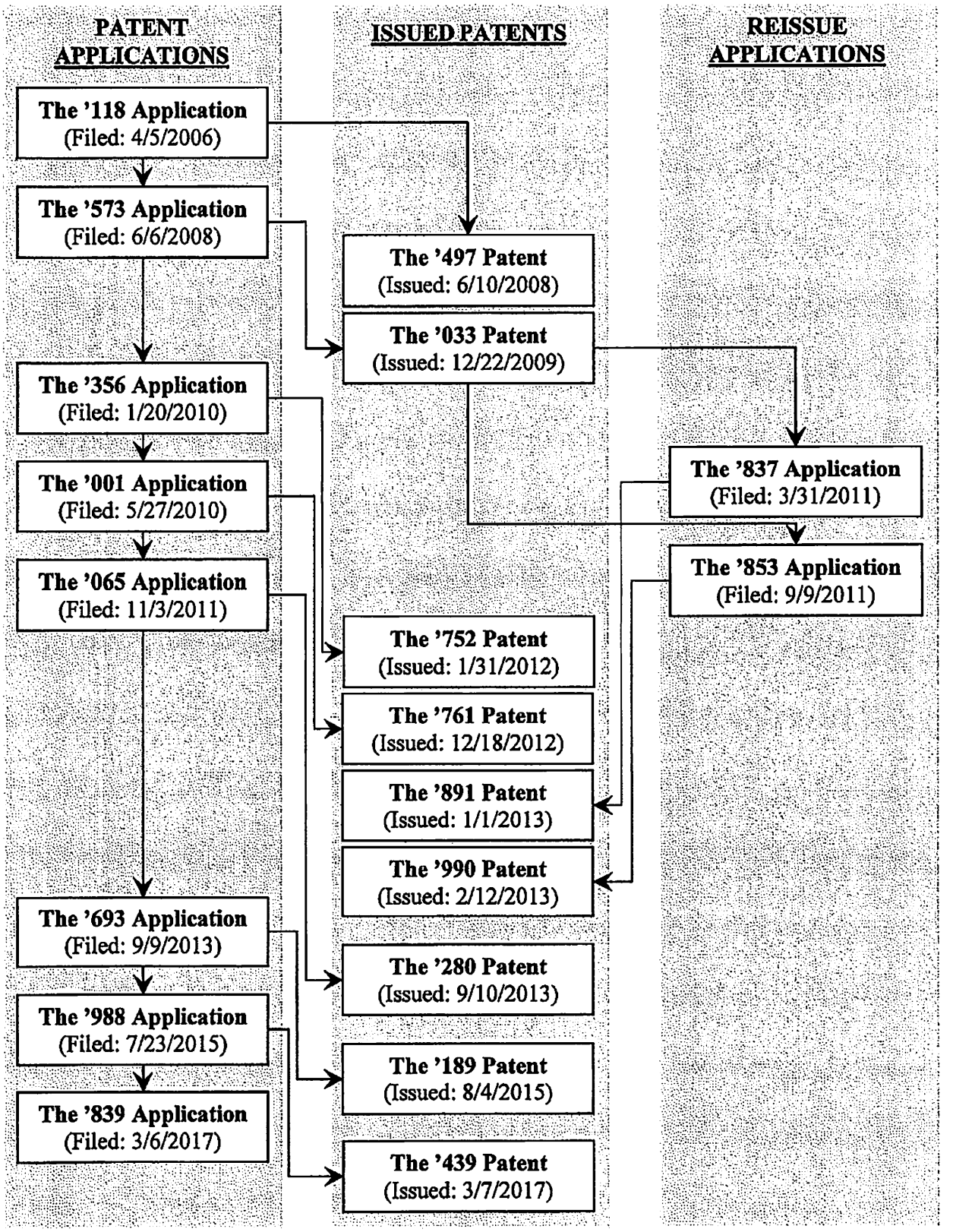
On March 7, 2017, the USPTO issued the '988 Application, as U.S. Patent No. 9,589,439 (the "'439 Patent"). 8/10/17 Am. Compl. ¶ 36; *see also* '439 Patent.

On June 29, 2017, the USPTO published the '839 Application, as U.S. Publication No. 2017/0186259. 8/10/17 Am. Compl. ¶ 3.

As a result of the aforementioned USPTO actions, Mr. Golden became the "sole owner of the entire right, title, and interest in and to" the '497, '033, '752, '761, '891, '990, '280, '189, and '439 Patents, as well as the '839 Application. 8/10/17 Am. Compl. ¶ 38; *see also* 2/12/16 Am. Compl. Ex. B–I.

The following Court Exhibit A shows the order in which each of the aforementioned patent applications was filed by Mr. Golden and issued by the USPTO.

COURT EXHIBIT A



B. National Science Foundation Grants And Cooperative Agreements.

In July 2004, the National Science Foundation (the "NSF")[7] issued "Cooperative Agreement Financial & Administrative Terms and Conditions" (the "2004 CA-FATCs"), to advise recipients that the "NSF cannot assume any liability for accidents, illnesses, injuries, or claims arising out of, or related to, any activities supported by an award or for unauthorized use of patented or copyrighted materials." 10/20/17 Gov't Mot. Ex. 15 (Article 38).

On September 1, 2004, the NSF awarded Cooperative Agreement No. EEC-0425914, "Integrated Nanomechanical Systems (COINS)," to the University of California, Berkeley ("UC Berkeley"), incorporating the 2004 CA-FATCs. 10/20/17 Gov't Mot. Ex. 20.

On July 1, 2007, the NSF issued "Cooperative Agreement Financial & Administrative Terms and Conditions" (the "2007 CA-FATCs"), to advise recipients that the "NSF cannot assume any liability for accidents, illnesses, injuries, or claims arising out of, or related to, any activities supported by an award or for unauthorized use of patented or copyrighted materials." 10/20/17 Gov't Mot. Ex. 15 (Article 39).

On September 1, 2009, the NSF awarded Cooperative Agreement No. EEC-0832819, "The Center of Integrated Nanomechanical Systems (COINS) Renewal Years 6-10," to UC Berkeley, incorporating the 2007 CA-FATCs. 10/20/17 Gov't Mot. Ex. 21.

On January 4, 2010, the NSF issued "Research Terms & Conditions" (the "2010 RT&Cs"), to advise recipients that the "NSF cannot assume any liability for accidents, illnesses or claims arising out of any work supported by an award or for unauthorized use of patented or copyrighted materials." 10/20/17 Gov't Mot. Ex. 15 (Article 25).

On August 19, 2010, the NSF awarded Grant No. CCF-1029585, "Collaborative Research: Computational Behavioral Science: Modeling, Analysis, and Visualization of Social and Communicative Behavior," to the Massachusetts Institute of Technology ("MIT"), incorporating the 2010 RT&Cs. 10/20/17 Gov't Mot. Ex. 6.

On January 14, 2013, the NSF issued "Research Terms & Conditions" (the "2013 RT&Cs"), to advise recipients that the "NSF cannot assume any liability for accidents, illnesses or claims arising out of any work supported by an award or for unauthorized use of patented or copyrighted materials." 10/20/17 Gov't Mot. Ex. 15 (Article 32).

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[7] The NSF is "an independent federal agency created by Congress in 1950 'to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense[.]' . . . With an annual budget of $7.5 billion (FY 2017), [the NSF is] the funding source for approximately 24 percent of all federally supported basic research conducted by America's colleges and universities." *About the National Science Foundation*, NAT'L SCI. FOUND., https://www.nsf.gov/about/ (last visited March 7, 2018).

On January 14, 2013, the NSF also awarded Grant No. CBET-1264377, "Multimode Smartphone Biosensor," to the University of Illinois at Urbana-Champaign ("UIUC"), incorporating the 2013 RT&Cs. 10/20/17 Gov't Mot. Ex. 7.

On July 16, 2013, the NSF awarded Grant No. EFRI-1332275, "EFRI-BioFlex: Cellphone-based Digital Immunoassay Platform for High-throughput Sensitive and Multiplexed Detection and Distributed Spatio-Temporal Analysis of Influenza," to the University of California, Los Angeles ("UCLA"), incorporating the 2013 RT&Cs. 10/20/17 Gov't Mot. Ex. 11.

On March 7, 2014, the NSF issued "Research Terms & Conditions" (the "2014 RT&Cs"), to advise recipients that the "NSF cannot assume any liability for accidents, illnesses or claims arising out of any work supported by an award or for unauthorized use of patented or copyrighted materials." 10/20/17 Gov't Mot. Ex. 15 (Article 34).

On June 13, 2014, the NSF awarded Grant No. CBET-1444240, "EAGER: Mobile-phone based single molecule imaging of DNA and length qualification to analyze copy-number variations in genome," to UCLA, incorporating the 2014 RT&Cs. 10/20/17 Gov't Mot. Ex. 10.

On July 3, 2014, the NSF awarded Grant No. CBET-1447893, "EAGER: Lab-in-a-Smartphone," to UIUC, incorporating the 2014 RT&Cs. 10/20/17 Gov't Mot. Ex. 8.

On July 25, 2014, the NSF awarded Grant No. IIP-1450552, "I-Corps: Nanophosphors as Ultra-Sensitive Lateral Flow Reporters in a Lab-on-Phone Platform," to the University of Houston ("UH"), incorporating the 2014 RT&Cs. 10/20/17 Gov't Mot. Ex. 12.

On August 11, 2014, the NSF awarded Grant No. CBET-1343058, "INSPIRE Track 2: Public Health, Nanotechnology, and Mobility (PHeNoM)," to Cornell University ("Cornell"), incorporating the 2014 RT&Cs. 10/20/17 Gov't Mot. Ex. 9.

On December 26, 2014, the NSF issued "Grant General Conditions (GC-1)" (the "2014 GGCs"), to advise recipients that the "NSF cannot assume any liability for accidents, bodily injury, illness, breach of contract, any other damages or loss, or any claims arising out of activities undertaken pursuant to the grant, whether with respect to persons or property of the grantee or third parties." 10/20/17 Gov't Mot. Ex. 15 (Section 45).

On August 6, 2015, the NSF awarded Grant No. 1533983, "PFI: BIC Human-Centered Smart-Integration of Mobile Imaging and Sensing Tools with Machine Learning for Ubiquitous Quantification of Waterborne and Airborne Nanoparticles," to UCLA, incorporating the 2014 GGCs. 10/20/17 Gov't Mot. Ex. 13.

On August 22, 2015, the NSF awarded Grant No. 1534126, "PFI: BIC-Pathtracker: A smartphone-based system for mobile infectious disease detection and epidemiology," to UIUC, incorporating the 2014 GGCs. 10/20/17 Gov't Mot. Ex. 14.

C. National Institutes Of Health Grants.

On February 18, 2014, the National Institutes of Health (the "NIH")[8] awarded Grant No. 1R43AI107984-01A1, "A Sensitive and Serotype-Specific Dengue Diagnostic Test for Low-Resource Setting," to AI Biosciences, Inc. 10/20/17 Gov't Mot. Ex. 19.

On January 20, 2015, the NIH awarded Grant No. 1R43CA193096-01, "KS Detect: A solar-powered and smartphone integrated instrument for point-of-care diagnosis of Kaposi's sarcoma," to A'AS Inc. 10/20/17 Gov't Mot. Ex. 18. This grant was "subject to" 45 C.F.R. § 75.435(h).[9] 10/20/17 Gov't Mot. Ex. 18.

On December 23, 2015, the NIH awarded Grant No. 1R21AI120973-01, "Field-deployable Assay for Differential Diagnosis of Malaria and Viral Febrile Illnesses," to Sandia National Laboratories. 10/20/17 Gov't Mot. Ex. 16. This grant also was "subject to" 45 C.F.R. § 75.435(h). 10/20/17 Gov't Mot. Ex. 16.

On June 20, 2016, the NIH awarded Grant No. 1R01EB021331-01, "FeverPhone: Point of Care Diagnosis of Acute Febrile Illness using a Mobile Device," to Cornell. 10/20/17 Gov't Mot. Ex. 17. And, this grant was "subject to" 45 C.F.R. § 75.435(h). 10/20/17 Gov't Mot. Ex. 17.

II. PROCEDURAL HISTORY.

On May 1, 2013, Mr. Golden ("Plaintiff") filed a Complaint in the United States Court of Federal Claims (ECF No. 1) ("5/1/13 Compl."), alleging that the United States Department of Homeland Security (the "DHS") infringed the '990 Patent. 5/1/13 Compl. 1–2.

On August 15, 2013, Plaintiff filed a "Notice of Supplement,"[10] providing "supplemental material" to support Plaintiff's May 1, 2013 Complaint. ECF No. 6.

On September 5, 2013, the Government filed a Motion For A More Definite Statement, pursuant to RCFC 12(e), requesting that Plaintiff amend Plaintiff's May 1, 2013 Complaint to incorporate numbered paragraphs, enumerate with particularity the devices or processes that allegedly infringe Plaintiff's patents, and identify the party-in-interest. ECF No. 9.

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[8] The NIH is "a part of the U.S. Department of Health and Human Services," and "is the largest source of funding for medical research in the world[.]" *Who We Are*, NAT'L INSTS. OF HEALTH, https://www.nih.gov/about-nih/who-we-are (last visited March 7, 2018).

[9] 45 C.F.R. § 75.435(h) provides that the "[c]osts of legal, accounting, and consultant services, and related costs, incurred in connection with patent infringement litigation, are unallowable unless otherwise provided for in the . . . award." 45 C.F.R. § 75.435(h)

[10] The court considered Plaintiff's August 15, 2013 "Notice of Supplement" as an Amended Complaint, filed pursuant to Rule of the United States Court of Federal Claims ("RCFC") 15(a)(1). ECF No. 21 ("On August 15, 2013, Plaintiff filed a Notice of Supplement that the court interprets as an Amended Complaint.").

On September 20, 2013, Plaintiff filed: a Motion To Strike Defendant's Motion For A More Definite Statement, pursuant to RCFC 12(f) (ECF No. 10); a Motion To Amend Complaint (ECF No. 11); a Response to the Government's September 5, 2013 Motion For A More Definite Statement (ECF No. 12); a Motion For Summary Judgment (ECF No. 13); and a Motion To Supplement Pleadings. ECF No. 14.

On October 15, 2013, Plaintiff filed a second Response to the Government's September 5, 2013 Motion For A More Definite Statement that the court considered as a Second Amended Complaint, filed with the court's leave, pursuant to RCFC 15(a)(2). ECF No. 19.

On October 21, 2013, the court granted the Government's September 5, 2013 Motion For A More Definite Statement, because Plaintiff's May 1, 2013 Complaint, August 15, 2013 Amended Complaint, and October 15, 2013 Second Amended Complaint were vague and ambiguous making it difficult for the Government to prepare an informed Answer. ECF No. 21. That same day, the Government filed a Response To Plaintiff's Motion For Summary Judgment. ECF No. 22.

On November 22, 2013, Plaintiff filed a More Definite Statement. ECF No. 24.

On December 20, 2013, the court denied Plaintiff's September 20, 2013 Motion For Summary Judgment, without prejudice, since the Government had not filed an Answer. ECF No. 28.

On December 30, 2013, Plaintiff filed a Motion To Amend And Supplement Pleadings Of The More Definite Statement. ECF No. 29.

On January 10, 2014, the Government filed an Answer to Plaintiff's December 30, 2013 Motion To Amend And Supplement Pleadings.[11] ECF No. 30.

On February 7, 2014, the court granted Plaintiff's December 30, 2013 Motion to Amend And Supplement Pleadings and ordered the parties to treat that motion as a Third Amended Complaint, filed by leave of the court, pursuant to RCFC 15(a)(2), superseding all prior complaints. ECF No. 32.

On March 31, 2014, the court issued an Order staying Plaintiff's Fifth Amendment Takings Clause claims and directing the parties to "proceed with Plaintiff's claims only as they relate to the alleged patent infringement by the United States." ECF No. 38.

On April 30, 2014, the DHS filed a petition for an *inter partes review* ("IPR")[12] of the '990 Patent before the USPTO Patent Trial and Appeal Board (the "PTAB").

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[11] The Government considered Plaintiff's December 30, 2013 Motion To Amend Pleadings as filed by leave of the court and, therefore, superseded Plaintiff's November 22, 2013 More Definite Statement. ECF No. 30 at n.1.

[12] IPR is "a trial proceeding conducted at the [USPTO] to review the patentability of one or more claims in a patent only on a ground that could be raised under [35 U.S.C.] §§ 102 or 103,

On October 8, 2014, the PTAB issued a Decision To Institute IPR of claims 11, 74, and 81 of the '990 Patent. *See Dep't of Homeland Sec. v. Golden,* IPR2014-00714, 2014 WL 6999625, at *1 (P.T.A.B. Oct. 8, 2014). Although the court did not stay this case while the PTAB proceedings were ongoing, the court did not take any substantive action during that time.

On October 1, 2015, the PTAB issued a final decision "grant[ing] Patent Owner's Motion to Amend . . . claims 11, 74, and 81 of the '990 Patent, and den[ying] the Motion to Amend . . . claims 154–156." *See Dep't of Homeland Sec. v. Golden,* IPR2014-00714, 2015 WL 5818910, at *17 (P.T.A.B. Oct. 1, 2015). On November 17, 2015, the PTAB denied Plaintiff's request for a rehearing of the PTAB's decisions. *See Dep't of Homeland Sec. v. Golden*, IPR2014-00714, 2015 WL 10381775 (P.T.A.B. Nov. 17, 2015).

On December 22, 2015, the court convened a telephone status conference to discuss how the case should proceed in light of the PTAB's final decision. ECF No. 67 (transcript). On December 23, 2015, the court issued an Order granting Plaintiff leave to file a fourth amended complaint, pursuant to RCFC 15(a)(2). ECF No. 65.

On February 12, 2016, Plaintiff filed a Fourth Amended Complaint. ECF No. 68. On February 19, 2016, Plaintiff filed a Claim Chart. ECF No. 69.

On April 8, 2016, the Government filed an Answer to Plaintiff's February 12, 2016 Fourth Amended Complaint. ECF No. 74.

On June 3, 2016, Plaintiff filed a Motion For Summary Judgment On Validity. ECF No. 79. On June 6, 2016, Plaintiff filed: a Motion For Response To Claim Charts (ECF No. 80); a Motion To Stay (ECF No. 81); and a Motion For Entry Of Devices. ECF No. 82. On June 8, 2016, Plaintiff filed a Motion For Entry Of Estimated Damages And Accounting Report. ECF No. 84.

On June 10, 2016 the court convened a telephone status conference. ECF No. 87 (transcript). On June 13, 2016, the court issued an Order directing the Government to file a Motion To Dismiss and staying Plaintiff's June 3, 2016 Motion For Summary Judgment and June 8, 2016 Motion For Entry Of Estimated Damages And Accounting Report. ECF No. 85.

On June 24, 2016, the Government filed a Motion To Dismiss Certain Accused Devices. ECF No. 88. On November 30, 2016, the court denied the Government's June 24, 2016 Motion To Dismiss, without prejudice. ECF No. 94.

On December 16, 2016, the court issued a Discovery Order allowing the parties to exchange jurisdictional discovery. ECF No. 97.

On February 3, 2017, the court issued an Order dismissing the following filings by Plaintiff, without prejudice: Plaintiff's June 3, 2016 Motion For Summary Judgment On Validity; Plaintiff's

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and only on the basis of prior art consisting of patents or printed publications." *Inter Partes Review*, U.S. PATENT & TRADEMARK OFFICE, https://www.uspto.gov/patents-application-process/appealing-patent-decisions/trials/inter-partes-review (last visited March 12, 2018).

June 6, 2016 Motion For Response To Claim Charts; Plaintiff's June 6, 2016 Motion To Stay; Plaintiff's June 6, 2016 Motion For Entry Of Devices; and Plaintiff's June 8, 2016 Motion For Entry Of Estimated Damages And Accounting Report. ECF No. 100.

On March 1, 2017, and prior to the completion of the court-ordered discovery, Plaintiff filed a Motion For Response To The February 19, 2016 Claim Chart. ECF No. 102. On March 24, 2017, Plaintiff filed a Motion To Supplement Plaintiff's Claim Chart (ECF No. 107) and a Motion To Supplement The Amended Complaint. ECF No. 108. On April 11, 2017, Plaintiff filed a second Motion for Summary Judgment On Validity. ECF No. 111.

On May 15, 2017, Plaintiff filed a "Motion To Supplement The Amended Complaint With Pleadings Of 28 U.S.C. § 1491 'Government Fifth Amendment Takings Of A Patent(s).'" ECF No. 114.

On May 24, 2017, the court convened a telephone status conference, wherein Plaintiff was directed "to file a [Fifth A]mended [C]omplaint that include[d] all of [Plaintiff's] concerns, all of [Plaintiff's] charges against the Government in one document. . . . No more supplements, no more anything else. Whatever is in that document will be what we're going to continue the case on." ECF No. 118.

On May 25, 2017, the court issued an Order denying all of Plaintiff's pending motions, *i.e.*, Plaintiff's March 1, 2017 Motion For Response To Claim Chart; Plaintiff's March 24, 2017 Motion To Supplement Plaintiff's Claim Chart; Plaintiff's March 24, 2017 Motion To Supplement The Amended Complaint; Plaintiff's April 11, 2017 Motion for Summary Judgment On Validity; and Plaintiff's May 15, 2017 Motion To Supplement The Amended Complaint. ECF No. 116. The May 25, 2017 Order also stated that "Plaintiff may amend his complaint and claim chart *one final time*, prior to the court's ruling on jurisdiction. *Plaintiff is ordered not to file any other motions or papers without leave of the court.*" ECF No. 116 at 2 (emphasis added).

On August 10, 2017, Plaintiff filed a Fifth Amended Complaint ("8/10/17 Am. Compl.") (ECF No. 120) and a Final Claim Chart. ECF No. 121. Plaintiff's August 10, 2017 Fifth Amended Complaint alleges that the Government: (1) violated the Fifth Amendment of the United States Constitution by taking for public use the '497, '033, '752, '761, '280, '891, '990, '189, and '439 Patents, without just compensation; and (2) is liable for infringement of the '497, '033, '752, '761, '280, '891, '990, '189, and '439 Patents, as well as the '839 Application under 28 U.S.C. § 1498(a). 8/10/17 Am. Compl. ¶¶ 87–92.

On August 24, 2017, Plaintiff sent an email to the Department of Justice (the "DOJ") stating:

> As you know my strategy was to continue submitting claims of "takings" and "infringement" for as long as the Government continued to prolong this case. (Larry Golden v. The United States: Case # 13-307 C). With that said, of course you know the claims ha[ve] moved from twelve (12) claims of "takings" and "infringement" that began in the year 2013, to seventy-two (72) claims of "takings" and "infringement" as of this year 2017.

> The Judge has ordered a final complaint and a final claim chart that was due on August 15. 2017. Because of the Judge order I can no longer continue my strategy of introducing new "takings" and "infringement" claims or new patents and patent claims.
>
> Therefore, I have changed my strategy. My new strategy is to file a complaint(s) in Federal District Court against Apple, Samsung, LG, Panasonic, and Motorola for Patent infringement on March 1, 2018. The strategy here is to force Apple, Samsung, and LG to decide between one or two choices: (1) In an effort to avoid any responsibility for infringement or liability of paying hundreds of billions of dollars in damages, the companies cho[o]se to throw the Government under the bus by presenting evidence that they were under contract to develop and manufacture devices that infringes my communication / monitoring device. If they cho[o]se this option it makes them a witness for me in my current case (Larry Golden v. The United States; Case # 13-307 C). (2) Deny the allegations of infringement. In this case I will present evidence to support the fact that the companies were under contract with the Government to develop and manufacture devices that infringe[] my communication / monitoring device, but that the companies decided to continue to develop and manufacture my communication / monitoring device beyond the specifications agreed upon with the Government, even after I notified the companies in 2010 to stop their manufacturing. If they chos[o]e this option it opens the companies up to willful infringement and the possibility of a temporary injunction to stop the manufacturing and development of my communication / monitoring device. If you were Apple, Samsung, and LG which option would you cho[o]se.

10/20/17 Gov't Mot. Ex. 1.

On October 20, 2017, the Government filed a Motion For Partial Dismissal ("10/20/17 Gov't Mot."), pursuant to RCFC 12(b)(1) and 12(b)(6). ECF No. 123.

On November 17, 2017, Plaintiff filed a Response And Motion For Leave To File A Motion For Summary Judgment ("11/17/17 Pl. Resp."). ECF No. 124.

On December 18, 2017, the Government filed a Reply And Opposition To Plaintiff's Motion For Leave To File A Motion For Summary Judgment ("12/18/17 Gov't Reply"). ECF No. 125.

On January 8, 2018, Plaintiff filed a Reply ("1/8/18 Pl. Reply"). ECF. No. 126.

III. STANDARD OF REVIEW.

A. Jurisdiction.

As a threshold matter, the court must consider jurisdiction before reaching the substantive merits of a case. *See Gonzalez v. Thaler*, 565 U.S. 134, 141 (2012) ("When a requirement goes to subject-matter jurisdiction, courts are obligated to consider *sua sponte* issues that the parties have

disclaimed or have not presented."). The burden of establishing jurisdiction "lies with the party seeking to invoke the court's jurisdiction." *Cedars-Sinai Med. Ctr. v. Watkins*, 11 F.3d 1573, 1583 (Fed. Cir. 1993).

B. Standard Of Review For A Motion To Dismiss Under RCFC 12(b)(1).

A challenge to the United States Court of Federal Claims' "general power to adjudicate in specific areas of substantive law . . . is properly raised by a [Rule] 12(b)(1) motion." *Palmer v. United States*, 168 F.3d 1310, 1313 (Fed. Cir. 1999); *see also* RCFC 12(b)(1) (allowing a party to assert, by motion, "lack of subject-matter jurisdiction").

If a motion to dismiss for lack of subject-matter jurisdiction "challenges the court's subject matter jurisdiction based on the sufficiency of the pleading's allegations . . . then those allegations are taken as true and construed in a light most favorable to the complainant." *Cedars-Sinai Med. Ctr.*, 11 F.3d at 1583. But, if such a motion "denies or controverts the pleader's allegations of jurisdiction, . . . the movant is deemed to be challenging the factual basis for the court's subject matter jurisdiction." *Id.* "In such a case, the allegations in the complaint are not controlling and only uncontroverted factual allegations are accepted as true for purposes of the motion. All other facts underlying the controverted jurisdictional allegations are in dispute and are subject to fact-finding by the . . . court." *Id.* at 1583–84 (internal citations omitted); *see also Moyer*, 190 F.3d at 1318 ("Fact-finding is proper when considering a motion to dismiss where the jurisdictional facts in the complaint . . . are challenged."). The court "may weigh relevant evidence when it considers a motion to dismiss that challenges the truth of jurisdictional facts alleged in a complaint." *Ferreiro*, 350 F.3d at 1324; *see also Reynolds v. Army & Air Force Exch. Serv.*, 846 F.2d 746, 747 (Fed. Cir. 1988) ("If a motion to dismiss for lack of subject matter jurisdiction . . . challenges the truth of the jurisdictional facts alleged in the complaint, the [trial] court may consider relevant evidence in order to resolve the factual dispute."); JAMES WM. MOORE, MOORE'S FEDERAL PRACTICE § 12.30[4] (3d ed. 2012) ("[W]hen a court reviews a complaint under a factual attack, the allegations have no presumptive truthfulness, and the court . . . has discretion to allow affidavits, documents, and even a limited evidentiary hearing to resolve disputed jurisdictional facts.").

If the court determines that it does not have subject-matter jurisdiction, the court must dismiss the complaint. *See* RCFC 12(h)(3) ("If the court determines at any time that it lacks subject-matter jurisdiction, the court must dismiss the action.").

C. Standard Of Review For A Motion To Dismiss Under RCFC 12(b)(6).

A claim is subject to dismissal under RCFC 12(b)(6), if it does not provide a basis for the court to grant relief. *See Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 555–56 (2007) ("[A well-pleaded complaint] requires more than labels and conclusions, and a formulaic recitation of the elements of a cause of action will not do. Factual allegations must be enough to raise a right of relief above the speculative level, on the assumption that all the allegations in the complaint are true (even if doubtful in fact)." (internal citations omitted)); *see also Lindsay v. United States*, 295 F.3d 1252, 1257 (Fed. Cir. 2002) ("A motion to dismiss . . . for failure to state a claim upon which

relief can be granted is appropriate when the facts asserted by the claimant do not entitle him to a legal remedy.").

A complaint must "contain sufficient factual matter, accepted as true, to 'state a claim to relief that is plausible on its face.'" *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (quoting *Twombly*, 550 U.S. at 570). "A claim has facial plausibility when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged." *Id.* The allegations in a complaint also must establish that there is "more than a sheer possibility that a defendant has acted unlawfully." *Id.* "Threadbare recitals of the elements of a cause of action, supported by mere conclusory statements, do not suffice." *Id.*; *see also Sioux Honey Ass'n v. Hartford Fire Ins. Co.*, 672 F.3d 1041, 1062 (Fed. Cir. 2012) (holding that a complaint "require[s] more than labels and conclusions"). To determine whether a complaint states a plausible claim for relief, the court must engage in a context-specific analysis and "draw on its judicial experience and common sense." *Iqbal*, 556 U.S. at 679. Therefore, the court is "not bound to accept as true a legal conclusion couched as a factual allegation." *Twombly*, 550 U.S. at 555.

D. Standard Of Review For *Pro Se* Litigants.

Pro se plaintiffs' pleadings are held to a less stringent standard than those of litigants represented by counsel. *See Haines v. Kerner*, 404 U.S. 519, 520 (1972) (holding that *pro se* complaints, "however inartfully pleaded," are held to "less stringent standards than formal pleadings drafted by lawyers"). The United States Court of Federal Claims traditionally has examined the record "to see if [a *pro se*] plaintiff has a cause of action somewhere displayed." *Ruderer v. United States*, 412 F.2d 1285, 1292 (Ct. Cl. 1969). Although the court may excuse ambiguities in a *pro se* plaintiff's complaint, the court "does not excuse [a complaint's] failures." *Henke v. United States*, 60 F.3d 795, 799 (Fed. Cir. 1995). ("The fact that [the plaintiff] acted *pro se* in the drafting of his complaint may explain its ambiguities, but it does not excuse its failures, if such there be.").

A *pro se* plaintiff is not excused from satisfying the burden of proof as to jurisdiction, by a preponderance of the evidence. *See McNutt v. Gen. Motors Acceptance Corp.*, 298 U.S. 178, 189 (1936) ("[The plaintiff] must allege in his pleading the facts essential to show jurisdiction."); *see also Reynolds,* 846 F.2d at 748 ([The *pro se* plaintiff] bears the burden of establishing subject matter jurisdiction by a preponderance of the evidence."). A *pro se* plaintiff cannot rely solely on conclusory allegations in the complaint, but must allege "competent proof" to establish jurisdiction. *McNutt,* 298 U.S. at 189; *see also Reynolds,* 846 F.2d at 748 ("[I]t was incumbent upon [the *pro se* plaintiff] to come forward with evidence establishing the court's jurisdiction."); *Zulueta v. United States*, 553 F. App'x 983, 985 (Fed. Cir. 2014) ("[T]he leniency afforded to a [*pro se*] litigant with respect to mere formalities does not relieve the burden to meet jurisdictional requirements." (quotation marks omitted)).

IV. DISCUSSION.

A. Whether Certain Patent Infringement Allegations[13] In The August 10, 2017 Fifth Amended Complaint Should Be Dismissed Under RCFC 12(b)(1) And 12(b)(6).

1. Patent Infringement Allegations In The August 10, 2017 Fifth Amended Complaint.

The August 10, 2017 Fifth Amended Complaint alleges that the Government: (1) violated the Fifth Amendment of the United States Constitution by taking for public use the '497, '033, '752, '761, '280, '891, '990, '189, and '439 Patents, without just compensation; and (2) is liable for infringement of the '497, '033, '752, '761, '280, '891, '990, '189, and '439 Patents, as well as the '839 Application under 28 U.S.C. § 1498(a). 8/10/17 Am. Compl. ¶¶ 87–92. The Fifth Amended Complaint alleges that the court has jurisdiction over the Takings Clause claims under 28 U.S.C. § 1491(a) and over the patent infringement allegations under 28 U.S.C. § 1498(a). 8/10/17 Am. Compl. ¶¶ 3–20.[14]

The August 10, 2017 Fifth Amended Complaint identifies numerous "devices" and "programs"[15] that allegedly were developed or procured, as a result of "contracts, agreements,

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[13] Hereinafter, the court refers to the patent infringement claims alleged in the August 10, 2017 Fifth Amended Complaint as "patent infringement *allegations*" to avoid confusion with the patent *claims* that are allegedly infringed.

[14] In accordance with the court's March 31, 2014 Order, the court will not rule on the Government's October 20, 2017 Motion For Partial Dismissal regarding Plaintiff's Fifth Amendment Takings Clause claims. ECF No. 38 (stating that "Plaintiff's takings claim[s] should be stayed" and directing the parties to "proceed with Plaintiff's claims only as they relate to the alleged patent infringement by the United States"). Therefore, those portions of the Government's October 20, 2017 Motion For Partial Dismissal relating to Plaintiff's Fifth Amendment Takings Clause claims are denied, without prejudice.

[15] The "devices" and "programs" identified include: Alluviam HazMasterG3; Apple HomeKit; Apple iPhone 5, 5c, 5s, 6, and 6 Plus ("Biodetector"); Apple iPads; Apple Watch; August Connect; "ATHENA;" August Smart Lock; Biomeme two3; Boeing MH-6 Little Bird; "Cell All;" "'COINS' Nano-Embedded Sensors;" DreamHammer Ballista; "EAGER;" Eureka High-Power Electromagnetic System; FePhone; FeverPhone; FLIR identiFINDER R300; Ford MyFord Mobile App; GammaPix; Kromek D3S-ID; Kromek D3S-NET; iControl mLOCK; "INSPIRE;" "Lab-on-a-Drone;" LG Electronics G5 Smartphone; LG Electronics V10 Smartphone; Lockheed Martin K-MAX; MultiRAE Pro; Navy/Marine Corps Intranet; Northrop Grumman X-47B; NutriPhone; Oshkosk TerraMax; Panasonic Toughbook 31 Laptop; PositiveID "Firefly DX;" SiN-VAPOR; Samsung Gear s2; Samsung Galaxy s6 ("BioPhone," "Biotouch System," "Nett Warrior"); Samsung SmartThings Hub; "Smartphone-Based Rapid Diagnostic Tests;" "VOCket System;" Volkswagen Car-Net e-Remote; and Yale Assure Lock.

grants, and procurements" between various federal entities[16] and private parties.[17] 8/10/17 Am. Compl. ¶¶ 91–406. These "devices" and "programs," independently or in combination, allegedly infringe claims of the '497, '033, '752, '761, '891, '990, '280, '189, and '439 Patents, as well as the '839 Application. 8/10/17 Am. Compl. ¶ 91. For example, regarding the LG Electronics G5 Smartphone, the Fifth Amended Complaint alleges the following:

> Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "LG Electronics G5 Smartphone". **Manufacture for the Government**; 2008: The "Cell-All" initiative. The [DHS-S&T] . . . , Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. [DHS-S&T] pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. **Used by the Government**; 2016: Both the LG G5 and V10 smartphones can be used by the [DOD]. The LG smartphones received a security certification from the U.S. Defense Information Systems Agency [(the "DISA")], as well as a certification by the National Information Assurance Partnership [(the "NIAP")]. Sensors will integrate with 261 million cell phones now used in the U.S. [and l]everage billions of dollars spent each year in sensor, carrier network and cell phone development. Multiple sensors network for chemical profiling; Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis,

[16] The federal entities identified include: the Department of the Army; the Department of the Air Force; the Department of Defense ("DOD"); the Department of Energy; the DHS; the Department of Homeland Security Science and Technology Directorate ("DHS-S&T"); the DOJ; the Department of the Navy; the Air Force Research Laboratory; the Army Communications-Electronics Research, Development and Engineering Center; the Army Edgewood Chemical Biological Center; the Army Research Laboratory; the Chemical Biological Radiological Nuclear Information Resource Center; the Defense Advanced Research Projects Agency; the Defense Threat Reduction Agency; the Domestic Nuclear Detection Office ("DNDO"); the Environmental Protection Agency; the Federal Emergency Management Agency; the General Services Administration; the Homeland Security Advanced Research Projects Agency; the Integrated Chemical Biological Radiological Nuclear and Explosive Program; the Joint Acquisition Chemical Biological Radiological Nuclear Knowledge System; the Joint Program Executive Office for Chemical and Biological Defense; the National Aeronautics and Space Administration; the Naval Air Systems Command; the Naval Research Laboratory; the NIH; the NSF; the Oak Ridge National Laboratory; and the Office of Naval Research.

[17] The "private parties" identified include: Alluviam LLC; Apple Inc.; Biomeme Inc.; Boeing Company; California Institute of Technology ("Caltech"); Cornell; Eureka Aerospace; "Ford;" Holomic LLC; Kromek Group plc; LG Electronics; Lockheed Martin Corporation; MIT; Motorola, Inc.; Northrop Grumman Corporation; Oshkosh Defense LLC; Panasonic Corporation; Passport Systems, Inc.; PositiveID Corporation; Qualcomm Inc.; Raytheon Ktech; Samsung; Stanford University ("Stanford"); UC Berkeley; UCLA; the University of California, Merced ("UC Merced"); UH; UIUC; and "Volkswagen."

> Cell-All's program manager. Multiple sensor units per phone are possible. Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster.
>
> As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the [DHS], the [DOD], and LG Electronics for the manufacture, development, commercialization, and/or use of the communication/ monitoring device "LG Electronics G5 Smartphone", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

8/10/17 Am. Compl. ¶¶ 93–97 (bold in original).

2. The Government's Argument.

The Government argues that the patent infringement allegations in ¶¶ 91–406 of the August 10, 2017 Fifth Amended Complaint reflect a "deliberate strategy to multiply the proceedings for as long as the [G]overnment . . . resist[s] settlement on Plaintiff's terms." 10/20/17 Gov't Mot. at 2. According to 28 U.S.C. § 1927,[18] parties are prohibited from "multiply[ing] the proceedings in any case unreasonably and vexatiously." 10/20/17 Gov't Mot. at 3. Although some leniency should be afforded a *pro se* plaintiff, such a plaintiff is not exempt from complying with the court's rules. 10/20/17 Gov't Mot. at 3. RCFC 41(b) authorizes the court to dismiss a claim for failure to comply with the court's rules or a court order. 10/20/17 Gov't Mot. at 3. Accordingly, the patent infringement allegations in the Fifth Amended Complaint should be dismissed under RCFC 41(b). 10/20/17 Gov't Mot. at 2–3.

In the alternative, the Government contends that 28 U.S.C. § 1498(a) "provides patent owners with a remedy of damages" in the United States Court of Federal Claims, but only "when the claimed invention is 'used or manufactured by . . . the United States' without a license." 10/20/17 Gov't Mot. at 7 (quoting 28 U.S.C. § 1498(a)). A private party's "use or manufacture" of a claimed invention will be considered a "use or manufacture for the Government" if the use or manufacture is: (1) for the benefit of the Government; and (2) with the Government's "authorization or consent." 10/20/17 Gov't Mot. at 7 (citing *Carrier Corp. v. United States*, 534 F.2d 244, 249 (Ct. Cl. 1976)).

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[18] 28 U.S.C. § 1927 provides that

> [a]ny attorney or other person admitted to conduct cases in any court of the United States or any Territory thereof who so multiplies the proceedings in any case unreasonably and vexatiously may be required by the court to satisfy personally the excess costs, expenses, and attorneys' fees reasonably incurred because of such conduct.

28 U.S.C. § 1927.

Regarding the "first requirement," private conduct incidentally benefitting the Government does not constitute use "for the benefit of the Government." 10/20/17 Gov't Mot. at 7 (citing *Sheridan v. United States*, 120 Fed. Cl. 127, 131 (Fed. Cl. 2015) ("Where benefits to the Government are merely an incidental effect of private conduct, they do not constitute 'use or manufacture for the Government' within the meaning of § 1498.")). As to the "second requirement," authorization or consent may be express or, in limited circumstances, implied. 10/20/17 Gov't Mot. at 8. For example, the Government "can provide express authorization and consent . . . by including [an] operative clause in a contract, or providing other formal, written authorization." 10/20/17 Gov't Mot. at 8. In addition, implied authorization may be presumed where there are "contracting officer instructions, [or] . . . specifications[,] or drawings which impliedly sanction and necessitate infringement." 10/20/17 Gov't Mot. at 8 (quoting *Hughes Aircraft Co. v. United States*, 534 F.2d 889, 901 (Ct. Cl. 1976)). Authorization and consent, however, "may be limited by clauses in a contract." 10/20/17 Gov't Mot. at 8 (citing *Carrier Corp.*, 534 F.2d at 249 ("Since Section 1498(a) expressly provides that any use of a patented invention for the Government must be authorized or consented to, it is plain that the Government can limit . . . authorization and consent[.]")).

The court does not have jurisdiction under 28 U.S.C. § 1498(a) to adjudicate patent infringement allegations concerning NSF and NIH grants and cooperative agreements, because any benefit to the Government, at best, would be incidental. 10/20/17 Gov't Mot. at 10–16. In addition, none of the grants or cooperative agreements evidence any "express or implied authorization and consent by the [G]overnment." 10/20/17 Gov't Mot. at 11, 16. In fact, the "expressly incorporated NSF Research Terms & Conditions" explicitly exempt the NSF from liability "for unauthorized use of patented . . . materials." 10/20/17 Gov't Mot. at 13. Similarly, the NIH grants include a reference to 45 C.F.R. Part 75, that "disallows [an] awardee from submitting '[c]osts of legal, accounting, and consultant services, and related costs, incurred in connection with patent infringement litigation [. . .] unless otherwise provided for in the [. . .] award.'" 10/20/17 Gov't Mot. at 14 (quoting 45 C.F.R. § 75.435(h)). Likewise, the award of NSF and NIH grants does not evidence implied authorization, because the Government does not direct or exercise control over the activities of awardees. 10/20/17 Gov't Mot. at 13. Although the cooperative agreements may involve a measure of Government involvement, they do not contain any text evidencing Government "authorization [or] consent to infringe another's patent." 10/20/17 Gov't Mot. at 15–16.

The Government also argues that the Fifth Amended Complaint's "allegations relating generally to smartphones and other consumer devices should be dismissed" under RCFC 12(b)(1) and 12(b)(6), because they fail to allege "actual 'use' by the [G]overnment of the various combinations of consumer devices, nor would the [G]overnment's use be plausible." 10/20/17 Gov't Mot. at 16–17. In addition, the Fifth Amended Complaint "fails to allege that any of these various consumer devices were made for the benefit of the [G]overnment." 10/20/17 Gov't Mot. at 17. The companies referenced in the Fifth Amended Complaint "manufacture, develop, and commercialize their devices in their own economic self-interest." 10/20/17 Gov't Mot. at 17. Moreover, any benefit that the Government might receive does "not constitute use or manufacture for the Government within the meaning of § 1498." 10/20/17 Gov't Mot. at 17–18 (quoting *Sheridan*, 120 Fed. Cl. at 131 (determining that the alleged benefit to the Government of economic "stimulus, jobs, and revenue" was "merely an incidental effect of private conduct, [that does] not

constitute 'use or manufacture for the Government' within the meaning of § 1498")). In sum, the Fifth Amended Complaint contains no allegations that the Government actually used or authorized the use of any of the accused devices at issue. 10/20/17 Gov't Mot. at 20. Instead, the Fifth Amended Complaint alleges only that the devices "can be used by the [Government]." 10/20/17 Gov't Mot. at 20 (underline in original).

Other allegations of the Fifth Amended Complaint also should be dismissed, under RCFC 12(b)(1) and 12(b)(6). 10/20/17 Gov't Mot. at 21. First, allegations of infringement "based on a number of devices allegedly developed by third party Passport Systems, Inc. in response to a Broad Agency Announcement ("BAA")" should be dismissed, because "a BAA is not a contract." 10/20/17 Gov't Mot. at 21 (citing 8/10/17 Am. Compl. ¶¶ 161–68). A BAA is "a general announcement of an agency's research interest" and "cannot be said to provide authorization and consent." 10/20/17 Gov't Mot. at 21–22 (quoting 48 C.F.R. § 2.101(b)). Second, patent infringement allegations concerning the '761, '280, and '189 Patents should be dismissed, because the Fifth Amended Complaint alleges no infringement of specific claims of these three patents. 10/20/17 Gov't Mot. at 22–23. Third, as to the '033 Patent, "there is no subject matter jurisdiction under Section 1498, because this patent was surrendered when it was reissued[.]" 10/20/17 Gov't Mot. at 22 (citing 35 U.S.C. § 251(a) ("[T]he Director shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent[.]")). Fourth, as to the '839 Application, there can be no infringement of unissued claims. 10/20/17 Gov't Mot. at 23 (citing *Stroughter v. United States*, 89 Fed. Cl. 755, 762 (Fed. Cl. 2009) ("Because plaintiffs' claims allege the infringement of unissued patents, the court's jurisdiction under § 1498 is lacking.")). In addition, the allegations of patent infringement of the '439 Patent are based on "activities" that occurred prior to issuance of the '439 Patent and must be dismissed as a matter of law. 10/20/17 Gov't Mot. at 23.

3. Plaintiff's Response And Motion For Leave To File A Motion For Summary Judgment.

Plaintiff responds that "[a]fter ten (10) months of jurisdictional discovery, the Government has fail[ed] to introduce any new evidence that supports its 'Motion to Dismiss Certain NSF and NIH Devices[.]'" 11/17/17 Pl. Resp. at 14. The Government's arguments are the same as those presented in the June 24, 2016 Motion To Dismiss. 11/17/17 Pl. Resp. at 14. In sum, "[t]he Government has not shown any disagreement, or has [not] tried to overcome [the court's November 30, 2016] 'Memorandum Opinion and Order Denying Government's Motion To Dismiss.'" 11/17/17 Pl. Resp. at 14. Therefore, "Plaintiff is standing on the [c]ourt's resolution and decision to dismiss." 11/17/17 Pl. Resp. at 14.

In the alternative, Plaintiff "seeks leave to file a motion for summary judgment," pursuant to RCFC 56(e) and 56(f). 11/17/17 Pl. Resp. at 1. Plaintiff contends that the Government is in "contempt of court" for "willfully disobey[ing]" the court's order to file a Motion To Dismiss "based on jurisdiction that was due on October 2, 2017." 11/17/17 Pl. Resp. at 2. Plaintiff "did not object" to the Government's September 15, 2017 request "for an extension of time to respond to Plaintiff's [Fifth] Amended Complaint," because "it was an extension of time . . . to file an answer." 11/17/17 Pl. Resp. at 3 (citing ECF No. 122 (Sept. 19, 2017 Order granting the Government "an additional 18 days to respond to Plaintiff's [Fifth Amended] Complaint")). Instead of filing an answer, the "Government has wasted 16 months of taxpayers' dollars

questioning this [c]ourt's jurisdiction[.]" 11/17/17 Pl. Resp. at 3. The Government is also in "contempt of court" for "willfully disobey[ing]" the court's order to "file an answer to Plaintiff's Complaint." 11/17/17 Pl. Resp. at 4–5 (citing ECF No. 122). In addition, the Government is in "contempt of court" for "willfully disobey[ing]" the court's order "NOT to file any additional [m]otions before a decision is made on jurisdiction." 11/17/17 Pl. Resp. at 5 (capitalization and underline in original). But, "[w]ithin the Government's latest 'Motion for Partial Dismissal . . . ' filed on 10/20/2017, the Government is asking the [c]ourt to rule on pleadings" that are not related to jurisdiction. 11/17/17 Pl. Resp. at 6. Plaintiff has "[s]uffered [p]rejudice," because of the Government's "[w]illful [c]onduct of [d]elaying." 11/17/17 Pl. Resp. at 8.

4. The Government's Reply And Opposition To Plaintiff's Motion For Leave To File A Motion For Summary Judgment.

The Government replies that "Plaintiff offers no rebuttal to the [Fifth] Amended Complaint's failure to plead any facts supporting the jurisdictional prerequisite that the newly accused consumer devices . . . were manufactured for the [G]overnment." 12/18/17 Gov't Reply at 5. "Nor does Plaintiff address the [Fifth] Amended Complaint's failure to allege use by the [G]overnment of accused devices[.]" 12/18/17 Gov't Reply at 5. In fact, "Plaintiff's attempt to drastically expand this case by introducing scores of consumer devices actually reinforces the [G]overnment's arguments for dismissal. Indeed, Plaintiff's bald [allegation] that '[t]he Government cannot use a smartphone of any kind without infringing Plaintiff's claimed invention' demonstrates the implausibility of Plaintiff's allegations of infringement." 12/18/17 Gov't Reply at 5 (underline in original). Plaintiff also "makes no showing that this [c]ourt has jurisdiction over the NSF and NIH awards[,] based on either express or implied authorization and consent." 12/18/17 Gov't Reply at 6. Although, "Plaintiff faults the [G]overnment for allegedly 'fail[ing] to introduce new evidence that supports' its argument that this [c]ourt lacks jurisdiction over the NSF and NIH awards . . . , in doing so, Plaintiff improperly reverses the burden of proving jurisdiction, which remains with Plaintiff." 12/18/17 Gov't Reply at 6 (citing *Sheridan*, 120 Fed. Cl. at 129 ("Subject-matter jurisdiction must be established by the plaintiff at the outset of any case before the Court proceeds to the merits of the action.")). Finally, "Plaintiff's additional evidence . . . and claim charts . . . should be excluded," because "[t]hese exhibits belatedly accuse additional products . . . in contravention of this [c]ourt's May 25, 2017 Scheduling Order, which permitted Plaintiff 'to amend his complaint and claim chart one final time, prior to the court's ruling on jurisdiction,' in which the complaint 'will allege all claims asserted against the Government.'" 12/18/17 Gov't Reply at 7 (quoting ECF No. 116).

In addition, "Plaintiff's demand for 'summary judgment' is improper," as it violates the court's May 25, 2017 Scheduling Order that "plainly and repeatedly prohibited Plaintiff from filing additional motions without first obtaining leave of court." 12/18/17 Gov't Reply at 3 (citing ECF No. 116 ("Plaintiff is ordered not to file any other motions or papers without leave of the court.")). "Styling the paper as one 'seek[ing] leave to file' does not undo Plaintiff's overreach." 12/18/17 Gov't Reply at 3. In addition, "Plaintiff misrepresents the [G]overnment's correspondence with Plaintiff and the [c]ourt to feign surprise by the [G]overnment's motion to dismiss[.]" 12/18/17 Gov't Reply at 3. Specifically, "[o]n September 15, [2017] the [G]overnment wrote to the [c]ourt, copying Plaintiff, that the [G]overnment intended to seek an extension 'to file its Motion to Dismiss.'" 12/18/17 Gov't Reply at 4 (underline in original). Therefore, because "Plaintiff's . . .

motion is premised on this misrepresentation . . . , it should be denied." 12/18/17 Gov't Reply at 4. In the alternative, Plaintiff's request for summary judgment is "premature because the case is in the pleadings stage, merits discovery has not yet opened, and the [c]ourt has not yet construed the claim terms." 12/18/17 Gov't Reply at 4 (citing RCFC 56(d) ("If a nonmovant shows by affidavit or declaration that, for specified reasons, it cannot present facts essential to justify its opposition, the court may . . . defer considering the motion or deny it[.]")).

5. Plaintiff's Reply.

Plaintiff's reply did not address the Government's arguments concerning the court's jurisdiction to adjudicate the patent infringement allegations of the August 10, 2017 Fifth Amended Complaint.

6. The Court's Resolution.

a. Governing Precedent.

The United States Court of Federal Claims has jurisdiction to adjudicate patent infringement allegations against the Government alleging that "an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same." 28 U.S.C. § 1498(a). In this context, "the use or manufacture of [a patented] invention . . . by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States." *Id.* Accordingly, the United States Court of Federal Claims has jurisdiction to adjudicate patent infringement allegations against the Government "arising upon either . . . of . . . two grounds: (1) unlicensed use or manufacture of a patented invention by the [Government] directly; and/or (2) unlicensed use or manufacture of a patented invention for the [Government] and with [the Government's] authorization or consent." *Hughes Aircraft Co.*, 534 F.2d at 897. As to the second basis for jurisdiction, 28 U.S.C. § 1498(a) "sets forth a two-part test for determining whether th[e] court has jurisdiction . . . over a particular [allegation]." *Id.* "Under this test, a finding of jurisdiction is conditioned upon a showing that[:] (1) the accused use or manufacture was undertaken for the Government, *i.e.*, for the Government's benefit; and (2) the Government gave its authorization or consent for the accused use or manufacture." *Id.* at 897–98.

Regarding the first element, infringing activity has been held to be "for the Government" under 28 U.S.C. § 1498(a), if it is "for the benefit of the Government." *Advanced Software Design Corp. v. Fed. Reserve Bank of St. Louis*, 583 F.3d 1371, 1378 (Fed. Cir. 2009). "Incidental benefit to the [G]overnment is insufficient[.]" *IRIS Corp. v. Japan Airlines Corp.*, 769 F.3d 1359, 1362 (Fed. Cir. 2014) (quotation marks and alterations omitted) (holding that the Government benefited from the examination of passports in "accord[ance with] federal law," because it "improves the detection of fraudulent passports and reduces demands on [G]overnment resources"); *see also Advanced Software Design Corp.*, 583 F.3d at 1378–79 (holding that requiring Federal Reserve Banks to use a certain "seal encoding" system to identify fraudulent bank checks, benefitted the Government by averting fraud and saving resources through the use of more efficient technology); *Hughes Aircraft Co.*, 534 F.2d at 897–99 (holding that the Government's participation in the

Skynet II satellite program was "for the Government," because the program was vital to the military defense and security of the United States).

Regarding the second element, "authorization or consent of the Government" may be express or implied. *See TVI Energy Corp. v. Blane*, 806 F.2d 1057, 1060 (Fed. Cir. 1986) ("Authorization or consent by the Government can be expressed . . . [or i]n proper circumstances, Government authorization can be implied."); *see also Hughes Aircraft Co.*, 534 F.2d at 901 (holding that implied authorization may be presumed when the Government provides "instructions, . . . specifications[,] or drawings which impliedly sanction and necessitate infringement"); *IRIS Corp.*, 769 F.3d at 1362 (holding that "the [G]overnment . . . clearly provided its authorization or consent[,] because [the contractor] . . . [could]not comply with its legal obligations without engaging in the allegedly infringing activities"); *Larson v. United States*, 26 Cl. Ct. 365, 370 (Cl. Ct. 1992) (holding that implied authorization or consent "may be found under the following conditions: (1) the [G]overnment expressly contracted for work to meet certain specifications; (2) the specifications cannot be met without infringing on a patent; and (3) the [G]overnment had some knowledge of the infringement"). In addition, the Government "can limit its authorization and consent" by "inclusion . . . of a standard clause [that] limits the Government's authorization and consent[.]" *Carrier Corp.*, 534 F.2d at 247–49 ("Since Section 1498(a) expressly provides that any use of a patented invention for the Government must be authorized or consented to, it is plain that the Government can limit . . . authorization and consent[.]").

b. Patent Infringement Allegations Concerning National Science Foundation Grants And Cooperative Agreements Must Be Dismissed Under RCFC 12(b)(1).

i. Regarding National Science Foundation Grants.

The Government argues that patent infringement allegations[19] concerning the nine NSF grants[20] should be dismissed under RCFC 12(b)(1), because: (1) in general, grants "by their nature . . . carry out an attenuated public purpose . . . instead of acquiring property or services for the direct benefit or use of the [G]overnment;" and (2) the NSF grants "are entirely devoid of express or implied authorization and consent by the [G]overnment." 10/20/17 Gov't Mot. at 11 (underline in original).

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[19] The paragraphs in the Fifth Amended Complaint that include patent infringement allegations concerning the NSF grants are: ¶¶ 184–85, 199–200, 235–36, 260–61, 265–66, 270–71, 275–76, 280–81, 285–86, 290–91, 295–96, 300–01, 305–06, and 350–51. These paragraphs are highlighted in yellow in the attached Court Exhibit B.

[20] The nine NSF grants are: Grant No. CCF-1029585 (10/20/17 Gov't Mot. Ex. 6); Grant No. CBET-1264377 (10/20/17 Gov't Mot. Ex. 7); Grant No. CBET-1447893 (10/20/17 Gov't Mot. Ex. 8); Grant No. CBET-1343058 (10/20/17 Gov't Mot. Ex. 9); Grant No. CBET-1444240 (10/20/17 Gov't Mot. Ex. 10); Grant No. EFRI-1332275 (10/20/17 Gov't Mot. Ex. 11); Grant No. IIP-1450552 (10/20/17 Gov't Mot. Ex. 12); Grant No. 1533983 (10/20/17 Gov't Mot. Ex. 13); and Grant No. 1534126 (10/20/17 Gov't Mot. Ex. 14).

The Fifth Amended Complaint alleges the following with respect to Grant No. CCF-1029585:

> Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the Samsung Galaxy s6 "BioPhone". The Samsung Galaxy s6 "Bio Phone" smartphone can measure your heart and breathing rates, even if you're not directly touching it. Researchers at MIT are working on a project called BioPhone that derives biological signals from your smartphone's accelerometer, which they say can capture the small movements of your body that result from the beating of your heart and rising and falling of your chest. This information is useful to base medical diagnoses in real-life conditions and to help track chronic health conditions and effects of therapeutic interventions. Research is based upon work supported by the [NSF] (NSF CCF-1029585), Samsung, and the MIT Media Lab Consortium.
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> As a result of contracts[21] with the . . . [NSF], Samsung Group, and the MIT Media Lab Consortium for the development and commercialization of the Samsung Galaxy s6 "BioPhone", and the "Samsung Electronic Communications Device", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

8/10/17 Am. Compl. ¶¶ 199–200.

The Fifth Amended Complaint contains patent infringement allegations arising from the award of the other NSF grants, each of which repeats the text of 28 U.S.C. § 1498(a) in conclusively alleging that, "[a]s a result of contracts with the [NSF] . . . the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions" as "a current manufacturer, consumer, and/or user" of the "devices" or "programs" developed under the NSF grants. 8/10/17 Am. Compl. ¶¶ 184–85, 199–200, 235–36, 260–61, 265–66, 270–71, 275–76, 280–81, 285–86, 290–91, 295–96, 300–01, 305–06, 350–51. The Fifth Amended Complaint, however, does not contain "the necessary supporting or primary facts sufficient" to support this conclusion. *See Hebern v. United States*, 132 Ct. Cl. 344, 348–49 (Ct. Cl. 1955). Instead, the Fifth Amended Complaint implies "direct" use or manufacture by the Government, based solely on the NSF's funding the development of allegedly infringing "devices" or "programs." 8/10/17 Am. Compl. ¶ 200 ("*As a result of* contracts," *i.e.*, the NSF grants, "the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions[.]" (emphasis added)). Funding alone, however, does not establish "direct" use or manufacture of "Plaintiff's inventions" by the

[21] The Fifth Amended Complaint's characterization of a NSF grant as a contract is incorrect. *Compare* 31 U.S.C. § 6304 ("An executive agency shall use a grant agreement . . . when . . . substantial involvement is not expected between the executive agency and the . . . recipient when carrying out the activity contemplated in the agreement."), *with* 31 U.S.C. § 6303 (describing the circumstances, inapplicable here, under which agencies are required to use "procurement contracts").

NSF, *see Capitol Boulevard Partners v. United States*, 31 Fed. Cl. 758, 761 (Fed. Cl. 1994) (determining that, with regard to federal grants, "the [G]overnment does not procure any property or services for its direct use, rather it provides funding"); and the Fifth Amended Complaint's conclusory allegations are not sufficient to establish jurisdiction. *See Norton v. Larney*, 266 U.S. 511, 515 (1925) ("It is quite true that the jurisdiction of a federal court must affirmatively and distinctly appear and cannot be helped by presumptions or by argumentative inferences drawn from the pleadings.").

The Fifth Amended Complaint also fails to allege that "the accused use or manufacture was undertaken . . . for the Government's benefit." *See Hughes Aircraft Co.*, 534 F.2d at 897. The Fifth Amended Complaint contains no factual allegations establishing anything more than "incidental benefit" to the NSF. *See Advanced Software Design Corp.*, 583 F.3d at 1379 (holding that "an interest in [a] program generally, or [where the Government] funds or reimburses all or part of [a program's] costs, is too remote to make the [G]overnment the program's beneficiary for the purposes underlying § 1498" (quoting *Larson*, 26 Cl. Ct. at 369)); *see also IRIS Corp.*, 769 F.3d at 1362 ("Incidental benefit to the [G]overnment is insufficient" to satisfy the requirements of 28 U.S.C. § 1498(a).).

Nor does the Fifth Amended Complaint allege that "the Government gave its authorization or consent for the accused use or manufacture." *See Hughes Aircraft Co.*, 534 F.2d at 897. The Fifth Amended Complaint does not contain any factual allegations establishing that the NSF, at any time, authorized or consented to infringing use or manufacture. For example, the Fifth Amended Complaint does not cite any portions of the NSF grants or communications between the NSF and grant awardees "expressly" or "implicitly" authorizing infringing conduct. *See Larson*, 26 Cl. Ct. at 369–70 ("[A]uthorization or consent requires explicit acts or extrinsic evidence sufficient to prove the [G]overnment's intention to accept liability for a specific act of infringement."). Nor does the Fifth Amended Complaint include any factual allegations that could be construed as "express" or "implicit" authorization or consent by the NSF to infringe Plaintiff's patents. *See Hughes Aircraft Co.*, 534 F.2d at 901 (holding that implied authorization may be presumed when the Government provides "instructions, . . . specifications[,] or drawings which impliedly sanction and necessitate infringement"); *see also IRIS Corp.*, 769 F.3d at 1362 (holding that "the [G]overnment . . . clearly provided its authorization or consent[,] because [the contractor] . . . cannot comply with its legal obligations without engaging in the allegedly infringing activities"). Instead, each of the NSF grants incorporated a standard clause advising that the NSF "cannot assume any liability for . . . claims arising out of any work supported by an award for unauthorized use of patented . . . materials" or, more generally, "with respect to . . . property of . . . third parties." 10/20/17 Gov't Mot. Ex. 15. Therefore, awardees were warned that the use of "property of . . . third parties," including "patented . . . materials," was "unauthorized." *See Carrier Corp.*, 534 F.2d at 247–49 (holding that the Government "can limit . . . authorization and consent" by "inclusion . . . of a standard clause [that] limits the Government's authorization and consent").

For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 184–85, 199–200, 235–36, 260–61, 265–66, 270–71, 275–76, 280–81, 285–86, 290–91, 295–96, 300–01, 305–06, and 350–51 of the August 10, 2017 Fifth Amended Complaint

failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these paragraphs of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

ii. Regarding National Science Foundation Cooperative Agreements.

The Government also argues that patent infringement allegations[22] concerning the two NSF cooperative agreements[23] should be dismissed under RCFC 12(b)(1). 10/20/17 Gov't Mot. at 15.

The Fifth Amended Complaint alleges the following with respect to the NSF cooperative agreements:

> Upon information and belief, the United States has infringed, and continues to infringe, at least claim 13 of the '439 Patent, and claims 18, 118, 12, 28, 25, 20, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the "COINS" Nano-Embedded Sensors for Smartphones: The Center of Integrated Nanomechanical Systems (COINS) is a multidisciplinary nanoscale science and engineering center (NSEC) funded by the [NSF] with its headquarters at [UC Berkeley] and satellite campuses at Stanford, Caltech, and [UC Merced]. The goal of COINS is to develop and integrate cutting-edge nanotechnologies into a versatile platform with various ultra-sensitive, ultra-selective, self-powering, mobile, wirelessly communicating detection applications; develop novel low-power, low-cost, selective nanomaterials-enable sensing systems for real-time detection of explosives, toxicants, and radiation and interface Nano-enable sensors with smart phones, eventually becoming embedded in the device.
>
> As a result of contracts[24] with the [NSF], the Center of Integrated Nanomechanical Systems (COINS), [UC Berkeley], Stanford, Caltech, [UC Merced], and Apple Inc. for the development and commercialization of the "COINS" Nano-Embedded Sensors for Smartphones, and the "Apple Inc.'s Electronic Communications Device", the United States has used, authorized the

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[22] The paragraphs in the Fifth Amended Complaint that include patent infringement allegations concerning the NSF cooperative agreements are: ¶¶ 194–95. These paragraphs are highlighted in green in the attached Court Exhibit B.

[23] The two NSF cooperative agreements are: Award No. 0425914 (10/20/17 Gov't Mot. Ex. 20) and Award No. 0832819 (10/20/17 Gov't Mot. Ex. 21).

[24] The Fifth Amended Complaint's characterization of a NSF cooperative agreement as a contract is incorrect. *Compare* 31 U.S.C. § 6305 (describing the circumstances under which agencies are required to use a "cooperative agreement"), *with* 31 U.S.C. § 6303 (describing the circumstances, inapplicable here, under which agencies are required to use "procurement contracts").

> use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439 and '990 Patents.

8/10/17 Am. Compl. ¶¶ 194–95.

The Fifth Amended Complaint, however, does not contain "the necessary supporting or primary facts sufficient to allege" that the Government "used, authorized the use, and manufactured . . . Plaintiffs inventions," as a result of the NSF cooperative agreements. *See Hebern*, 132 Ct. Cl. at 348–49. Instead, the Fifth Amended Complaint implies "direct" use or manufacture by the Government, based solely on the NSF's funding the development of allegedly infringing "devices" or "programs." 8/10/17 Am. Compl. ¶ 194 ("The Center of Integrated Nanomechanical Systems (COINS) is a multidisciplinary nanoscale science and engineering center (NSEC) *funded* by the [NSF.]" (emphasis added)). Funding alone, however, does not establish "direct" use or manufacture of "Plaintiff's inventions" by the NSF. *See Capitol Boulevard Partners*, 31 Fed. Cl. at 761. Although cooperative agreements entail some greater involvement by the NSF than grants, that fact also does not establish "direct" use or manufacture by the NSF; and the Fifth Amended Complaint failed to allege any other involvement by the NSF. *Compare* 31 U.S.C. § 6305 ("An executive agency shall use a cooperative agreement . . . when . . . substantial involvement is expected between the executive agency and the . . . recipient when carrying out the activity contemplated in the agreement."), *with* 31 U.S.C. § 6304 ("An executive agency shall use a grant agreement . . . when . . . substantial involvement is not expected between the executive agency and the . . . recipient when carrying out the activity contemplated in the agreement."). Nor does the Fifth Amended Complaint cite any portions of the NSF cooperative agreements or communications between the NSF and cooperative agreement awardees from which the court reasonably could infer "direct" use or manufacture by the NSF; and the Fifth Amended Complaint's conclusory allegations are not sufficient to establish jurisdiction. *See Norton*, 266 U.S. at 515 ("It is quite true that the jurisdiction of a federal court must affirmatively and distinctly appear and cannot be helped by presumptions or by argumentative inferences drawn from the pleadings.").

The Fifth Amended Complaint also fails to allege that "the accused use or manufacture was undertaken . . . for the Government's benefit." *See Hughes Aircraft Co.*, 534 F.2d at 897. The Fifth Amended Complaint contains no factual allegations establishing anything more than "incidental benefit" to the Government. *See Advanced Software Design Corp.*, 583 F.3d at 1379 (holding that "an interest in [a] program generally, or [where the Government] funds or reimburses all or part of [a program's] costs, is too remote to make the [G]overnment the program's beneficiary for the purposes underlying § 1498" (quoting *Larson*, 26 Cl. Ct. at 369)); *see also IRIS Corp.*, 769 F.3d at 1362 ("Incidental benefit to the [G]overnment is insufficient" to satisfy the requirements of 28 U.S.C. § 1498(a).). Moreover, although cooperative agreements entail some greater involvement by the NSF than grants, the purpose is the same, *i.e.*, "to transfer a thing of value . . . *instead of acquiring . . . property or services for the direct benefit or use of the . . . Government.*" 31 U.S.C. § 6305 (emphasis added); *see also* 31 U.S.C. § 6304 ("[T]he principal purpose of [a grant agreement] is to transfer a thing of value . . . instead of acquiring . . . property or services for the direct benefit or use of the . . . Government.").

Nor does the Fifth Amended Complaint allege that "the Government gave its authorization or consent for the accused use or manufacture." *See Hughes Aircraft Co.*, 534 F.2d at 897. The

Fifth Amended Complaint does not contain any factual allegations establishing that the NSF, at any time, authorized or consented to infringing use or manufacture. For example, the Fifth Amended Complaint does not cite any portions of the NSF cooperative agreements or communications between the NSF and cooperative agreement awardees "expressly" or "implicitly" authorizing infringing conduct. *See Larson*, 26 Cl. Ct. at 369–70 ("[A]uthorization or consent requires explicit acts or extrinsic evidence sufficient to prove the [G]overnment's intention to accept liability for a specific act of infringement."). Nor does the Fifth Amended Complaint include any factual allegations that could be construed as "express" or "implied" authorization or consent by the NSF to infringe Plaintiff's patents. *See Hughes Aircraft Co.*, 534 F.2d at 901 (holding that implied authorization may be presumed when the Government provides "instructions, . . . specifications[,] or drawings which impliedly sanction and necessitate infringement"); *see also IRIS Corp.*, 769 F.3d at 1362 (holding that "the [G]overnment . . . clearly provided its authorization or consent[,] because [the contractor] . . . cannot comply with its legal obligations without engaging in the allegedly infringing activities"). Instead, each of the NSF cooperative agreements incorporated a standard clause advising that the NSF "cannot assume any liability for . . . claims arising out of, or related to, . . . [the] unauthorized use of patented . . . materials." 10/20/17 Gov't Mot. Ex. 15. Therefore, awardees were warned that the use of "patented . . . materials" was "unauthorized." *See Carrier Corp.*, 534 F.2d at 247–49 (holding that the Government "can limit . . . authorization and consent" by "inclusion . . . of a standard clause [that] limits the Government's authorization and consent").

For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 194–95 of the August 10, 2017 Fifth Amended Complaint failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these paragraphs of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

c. Patent Infringement Allegations Concerning National Institutes Of Health Grants Must Be Dismissed Under RCFC 12(b)(1).

The Government also argues that patent infringement allegations[25] concerning the four NIH grants[26] should be dismissed under RCFC 12(b)(1). 10/20/17 Gov't Mot. at 14–15.

The Fifth Amended Complaint alleges the following with respect to Grant No. 1R21AI120973:

> Upon information and belief, the United States has infringed, and continues to infringe, at least claim 20 of the '439 Patent, claim 34 of the '752 patent, and

[25] The paragraphs in the Fifth Amended Complaint that include patent infringement allegations concerning the NIH grants are: ¶¶ 335–36, 355–56, 360–61, and 365–66. These paragraphs are highlighted in blue in the attached Court Exhibit B.

[26] The four NIH grants are: Grant No. 1R21AI120973-01 (10/20/17 Gov't Mot. Ex. 16); Grant No. 1R01EB021331-01 (10/20/17 Gov't Mot. Ex. 17); Grant No. 1R43CA193096-01 (10/20/17 Gov't Mot. Ex. 18); and Grant No. 1R43AI107984-01A1 (10/20/17 Gov't Mot. Ex. 19).

> claims 118, 18, 92, 25, and 124 of the '990 Patent as a current manufacturer, consumer, and/or user of the "FeverPhone" that is interconnected to the Apple iPhone. Cornell['s] David Erickson, a mechanical engineer, and Saurabh Mehta, a physician and nutrition researcher. The [NIH] . . . has awarded to Cornell a four-year, $2.3 million grant to develop FeverPhone, which will diagnose six febrile diseases in the field: dengue, malaria, chikungunya, typhoid fever, leptospirosis and Chagas' disease. FeverPhone—hardware and software, working in combination with a smartphone or tablet—will provide a real-time, rapid and accurate diagnosis using a drop of blood to differentiate and identify specific pathogens. While the Zika virus was not included in this specific grant, as the application was submitted before the current outbreak, the technology potentially can be expanded to include it. "FeverPhone," a smartphone based molecular diagnostics platform for point-of-care differential diagnosis of six common causes of acute febrile illness includes: (1) a specialized 6-plexed colorimetric IgM/IgG assay cartridge that exploits color discrimination assay on mobile devices, (2) associated iPad based hardware that allows rapid interpretation of the cartridge results, and (3) software that combines differential molecular diagnosis with a confirmatory symptomatic interface.
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> As a result of contracts[27] with the [NIH] . . . , Cornell . . . , and Apple Inc. for the development and commercialization of the "FeverPhone" and the "Apple Inc.'s Electronic Communications Device" the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, '752, and '990 Patents.

8/10/17 Am. Compl. ¶¶ 355–56.

The Fifth Amended Complaint contains patent infringement allegations arising from the award of the other NIH grants, each of which repeats the text of 28 U.S.C. § 1498(a) in conclusively alleging that, "[a]s a result of contracts with the [NIH] . . . the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions" as "a current manufacturer, consumer, and/or user" of the "devices" or "programs" developed under the NIH grants. 8/10/17 Am. Compl. ¶¶ 336, 356, 361, 366. The Fifth Amended Complaint, however, does not contain "the necessary supporting or primary facts sufficient" to support this conclusion. *See Hebern*, 132 Ct. Cl. at 348–49. Instead, the Fifth Amended Complaint implies "direct" use or manufacture by the Government, based solely on the NIH's funding the development of allegedly infringing "devices" or "programs." 8/10/17 Am. Compl. ¶ 356 ("*As a result of* contracts," *i.e.*, the NIH grants, "the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions[.]" (emphasis added)). Funding alone, however, does not establish "direct" use or manufacture of "Plaintiff's inventions" by the NIH, *see Capitol Boulevard Partners*, 31 Fed. Cl. at 761 (determining that, with regard to federal grants, "the [G]overnment does not procure any property or services for its direct use, rather it provides funding"); and the Fifth Amended Complaint's conclusory allegations are not sufficient to establish jurisdiction. *See Norton*, 266

[27] As previously explained, the Fifth Amended Complaint's characterization of a NIH grant as a contract is incorrect. *See* 31 U.S.C. §§ 6303–6304 (distinguishing between grant agreements and procurement contracts).

U.S. at 515 ("It is quite true that the jurisdiction of a federal court must affirmatively and distinctly appear and cannot be helped by presumptions or by argumentative inferences drawn from the pleadings.").

The Fifth Amended Complaint also fails to allege that "the accused use or manufacture was undertaken . . . for the Government's benefit." *See Hughes Aircraft Co.*, 534 F.2d at 897. The Fifth Amended Complaint contains no factual allegations establishing more than "incidental benefit" to the Government. *See Advanced Software Design Corp.*, 583 F.3d at 1379 (holding that "an interest in [a] program generally, or [where the Government] funds or reimburses all or part of [a program's] costs, is too remote to make the [G]overnment the program's beneficiary for the purposes underlying § 1498" (quoting *Larson*, 26 Cl. Ct. at 369)); *see also IRIS Corp.*, 769 F.3d at 1362 ("Incidental benefit to the [G]overnment is insufficient" to satisfy the requirements of 28 U.S.C. § 1498(a).).

Nor does the Fifth Amended Complaint allege that "the Government gave its authorization or consent for the accused use or manufacture." *See Hughes Aircraft Co.*, 534 F.2d at 897. The Fifth Amended Complaint does not contain any factual allegations establishing that the NIH, at any time, authorized or consented to infringing use or manufacture. For example, the Fifth Amended Complaint does not cite any portions of the NIH grants "expressly" or "implicitly" authorizing infringing conduct. *See Larson*, 26 Cl. Ct. at 369–70 ("[A]uthorization or consent requires explicit acts or extrinsic evidence sufficient to prove the [G]overnment's intention to accept liability for a specific act of infringement."). Nor does the Fifth Amended Complaint include any factual allegations that could be construed as "express" or "implied" authorization or consent by the NIH to infringe Plaintiff's patents. *See Hughes Aircraft Co.*, 534 F.2d at 901 (holding that implied authorization may be presumed when the Government provides "instructions, . . . specifications[,] or drawings which impliedly sanction and necessitate infringement"); *see also IRIS Corp.*, 769 F.3d at 1362 (holding that "the [G]overnment . . . clearly provided its authorization or consent[,] because [the contractor] . . . cannot comply with its legal obligations without engaging in the allegedly infringing activities"). Instead, three of the NIH grants were "subject to" 45 C.F.R. § 75.435(h), that provides that "[c]osts of legal . . . services, and related costs, incurred in connection with patent infringement litigation, are unallowable unless otherwise provided for in the . . . award." 45 C.F.R. § 75.435(h). Although the text of 45 C.F.R. § 75.435(h) does not directly pertain to the NIH's authorization or consent, it does bolster the conclusion that the NIH grants are devoid of express or implied authorization or consent.

For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 335–36, 355–56, 360–61, and 365–66 of the August 10, 2017 Fifth Amended Complaint failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these paragraphs of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

d. Patent Infringement Allegations Concerning The Government's Alleged Use Of "Smartphones And Other Consumer Devices" Must Be Dismissed Under RCFC 12(b)(1) And 12(b)(6).

The Government argues that patent infringement allegations[28] "relating generally to smartphones and other consumer devices" should be dismissed under RCFC 12(b)(1), because the Fifth Amended Complaint "fails to sufficiently allege actual 'use' by the [G]overnment of the various combinations of consumer devices, nor would the [G]overnment's use be plausible." 10/20/17 Gov't Mot. at 17.

The Fifth Amended Complaint alleges the following with respect to the "LG Electronics G5 Smartphone":

> Upon information and belief, the United States has infringed, and continues to infringe, at least claim 22 of the '439 Patent, and claims 18, 118, 12, 28, 25, 30, 22, and 20 of the '990 Patent as a current manufacturer, consumer, and/or user of the "LG Electronics G5 Smartphone". **Manufacture for the Government**; 2008: The "Cell-All" initiative. The [DHS-S&T] . . . , Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. [DHS-S&T] pursued cooperative agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. **Used by the Government**; 2016: Both the LG G5 and V10 smartphones can be used by the [DOD]. The LG smartphones received a security certification from the [DISA], as well as a certification by the [NIAP]. Sensors will integrate with 261 million cell phones now used in the U.S. [and l]everage billions of dollars spent each year in sensor, carrier network[,] and cell phone development. Multiple sensors network for chemical profiling; Cell-All aims "to equip your cell phone with a sensor capable of detecting deadly chemicals", says Stephen Dennis, Cell-All's program manager. Multiple sensor units per phone are possible. Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster.
>
> As a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78), the [DHS], the [DOD], and LG Electronics for the manufacture, development, commercialization, and/or use of the communication/monitoring device "LG Electronics G5 Smartphone", the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '439, and '990 Patents.

8/10/17 Am. Compl. ¶¶ 96–97 (bold in original).

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[28] The paragraphs in the Fifth Amended Complaint that include patent infringement allegations "relating generally to smartphones and other consumer devices" are: ¶¶ 96–97, 101–02, 106–07, 111–12, 116–17, 121–22, 126–27, 131–32, 136–37, 141–42, 146–47, and 151–52. These paragraphs are highlighted in orange in the attached Court Exhibit B.

The Fifth Amended Complaint includes patent infringement allegations concerning the Government's alleged "use" and "manufacture" of other "smartphones [and] consumer devices," each of which repeats the text of 28 U.S.C. § 1498(a) in conclusively alleging that, "[a]s a result of contracts, agreements, and procurements with various Government Agencies (¶¶ 49-78) . . . the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions[.]'" 8/10/17 Am. Compl. ¶¶ 97, 102, 107, 112, 117, 122, 127, 132, 137, 142, 147, 152. To support this allegation, the Fifth Amended Complaint repeatedly cites to ¶¶ 49–78 of the Fifth Amended Complaint. These paragraphs describe the Government's intent to "allow" or "approve" the "use" of various "smartphones and other consumer devices," *e.g.*, "the iPhone 5c and 5s." 8/10/17 Am. Compl. ¶ 75. For example, ¶ 53 of the Fifth Amended Complaint states:

> 2012: "The [DOD] expects in coming weeks to grant two separate *security approvals* for Samsung's Galaxy smartphones, along with iPhones and iPads running Apple's latest operating system—moves that would boost the number of U.S. government agencies *allowed* to use those devices. An *approval* by the Pentagon is considered as the highest standard[] in security."

8/10/17 Am. Compl. ¶ 53 (emphasis added).

Similarly, ¶ 72 of the Fifth Amended Complaint states:

> 2014: "By opening its networks to Samsung and Apple devices, [DISA] . . . intends to broaden the variety of mobile computers that troops and civilian [DOD] employees *can use* in the field, on bases, in offices and elsewhere to receive and send information and work almost anywhere at any time."

8/10/17 Am. Compl. ¶ 72 (emphasis added).

The Fifth Amended Complaint, however, does not allege that the Government's intent to "allow" or "approve" the use of "smartphones and other consumer devices" infringes Plaintiff's patents. Instead, the Fifth Amended Complaint alleges that the Government's use of these devices *in combination with* other "devices" or "programs," *e.g.*, the "'Cell-All' initiative," infringes Plaintiff's patents. 8/10/17 Am. Compl. ¶¶ 96–97. No factual allegations, however, support assuming that the Government used or authorized the use of these other "devices" or "programs" to infringe Plaintiff's patents.

For example, although the Fifth Amended Complaint alleges that the "LG Electronics G5 Smartphone . . . can be used" by the Government, such an allegation does not support the conclusion that the Government used or authorized the use of these devices to run the "'Cell-All' initiative." 8/10/17 Am. Compl. ¶¶ 96–97. Nor do such allegations imply that the Government's use of the "LG Electronics G5 Smartphone" infringes Plaintiff's patents, since the Government may simply use these devices to make calls. Without supporting factual allegations, however, the court cannot assume infringing use or manufacture by the Government. *See Norton*, 266 U.S. at 515 ("It is quite true that the jurisdiction of a federal court must affirmatively and distinctly appear and cannot be helped by presumptions or by argumentative inferences drawn from the pleadings."); *see also* 5B CHARLES A. WRIGHT & ARTHUR R. MILLER, FED. PRACTICE & PROCEDURE § 1350 (3d ed. 2004) ("[A]rgumentative (as opposed to reasonable) inferences

favorable to the pleader will not be drawn and conclusory allegations or conclusions of law will not be credited."). In sum, although the factual allegations of the Fifth Amended Complaint may support a conclusion that the Government "allowed" or "approved" the "use" of various "smartphones and other consumer devices," they do not support the conclusion that the Government used or authorized the use of these devices in an infringing manner.

For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 96–97, 101–02, 106–07, 111–12, 116–17, 121–22, 126–27, 131–32, 136–37, 141–42, 146–47, and 151–52 of the August 10, 2017 Fifth Amended Complaint failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these paragraphs of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

In the alternative, the Government argues that the same allegations should be dismissed under RCFC 12(b)(6), for "improperly alleg[ing] infringement by or for the [G]overnment in irreconcilably vague and omnibus fashion by repeatedly citing 'contracts, agreements, and procurements with various Government Agencies.'" 10/20/17 Gov't Mot. at 17.

The Government's position is correct, because the Fifth Amended Complaint does not contain factual allegations supporting that, "[a]s a result of *contracts, agreements, and procurements* with various Government Agencies . . . the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions[.]" 8/10/17 Am. Compl. ¶ 97 (emphasis added). The Fifth Amended Complaint fails to identify the "contracts, agreements, and procurements" at issue. Without more, the Fifth Amended Complaint has not met the requirements of *Twombly* and *Iqbal*. Nor does the Fifth Amended Complaint provide anything other than conclusory allegations that the Government used or authorized the use of "smartphones and other consumer devices" in a manner that infringes Plaintiff's patents. Such "[t]hreadbare recitals of the elements of a cause of action, supported by mere conclusory statements, [however,] do not suffice." *Iqbal*, 556 U.S. at 678; *see also Sioux Honey Ass'n*, 672 F.3d at 1062 (holding that a complaint "require[s] more than labels and conclusions").

For these reasons, the court has determined that even if the August 10, 2017 Fifth Amended Complaint established jurisdiction as to the patent infringement allegations contained in ¶¶ 96–97, 101–02, 106–07, 111–12, 116–17, 121–22, 126–27, 131–32, 136–37, 141–42, 146–47, and 151–52 of the Fifth Amended Complaint, the allegations contained therein failed to state a claim upon which relief may be granted and must be dismissed under RCFC 12(b)(6).

e. Patent Infringement Allegations Concerning Broad Agency Announcements Must Be Dismissed Under RCFC 12(b)(6).

The Government argues that patent infringement allegations[29] concerning a DNDO BAA should be dismissed under RCFC 12(b)(6), because the Fifth Amended Complaint "fails to

[29] The paragraphs in the Fifth Amended Complaint that include patent infringement allegations concerning the DNDO BAA are: ¶¶ 161–67. These paragraphs are highlighted in red in the attached Court Exhibit B.

plausibly allege that the Government either used or manufactured any technologies described in the BAA." 10/20/17 Gov't Mot. at 22.

In relevant part, the Fifth Amended Complaint alleges:

> Upon information and belief, the United States has infringed, and continues to infringe, at least claims 1, 2, and 4 of the '497 Patent, claims 34, and 37 of the '752 Patent, claims 13, and 14 of the '439 Patent, and claims 119, 29, 18, 118, 12, 28, 25, 20, 124, 32, and 30 of the '990 Patent as a current manufacturer, consumer, and/or user of the l"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS2 SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS2 SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCV) "TOUGHBOOK 31" Panasonic Laptop:
>
> 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone: In response to the [DNDO's] BAA 09-102 Passport Systems, Inc. of Billerica, MA has developed a system of networked portable spectroscopic radiation detectors to improve the detection, localization, and identification of radiological threats.
>
> * * *
>
> NetS2 SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone: Passport Systems Inc. G500 Radiation Detector alarms when radiation levels are detected; used as a standalone device or as part of a network; is the same size, form factor and weight as a smartphone and easily added to the belt of safety personnel; is paired with a smartphone via Bluetooth, and automatically joins a SmartShield Network.
>
> * * *
>
> As a result of contracts with the [DNDO], Passport Systems, Inc., Panasonic Corporation, and the Samsung Group for the development and commercialization of the l"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; 2"x2" Detection Device (DD) Samsung Galaxy s6 Smartphone; NetS2 SmartShield G300 Radiation Detector Samsung Galaxy s6 Smartphone; NetS2 SmartShield G500 Radiation Detector Samsung Galaxy s6 Smartphone; and the Passport Systems Base Control Unit (BCU) "TOUGHBOOK 31" Panasonic Laptop the United States has used, authorized the use, and manufactured, without license or legal right, Plaintiff's inventions described in and covered by the '497, '439, '752, and '990 Patents.

8/10/17 Am. Compl. ¶¶ 161–62, 165, 167.

But, the conclusion that, "[a]s a result of *contracts* with the DNDO . . . the United States has used, authorized the use, and manufactured . . . Plaintiff's inventions,'" is not plausibly supported by factual allegations in the Fifth Amended Complaint. 8/10/17 Am. Compl. ¶ 167

(emphasis added). Indeed, the Fifth Amended Complaint fails to identify a single "contract" with the DNDO. Instead, it alleges only that the DNDO issued a BAA; a BAA, however, is not a "contract." *See* 48 C.F.R. § 2.101(b) (defining a "BAA" as "a general announcement of an agency's research interest including criteria for selecting proposals and soliciting the participation of all offerors capable of satisfying the Government's needs"). Again, without more, the Fifth Amended Complaint has not met the requirements of *Twombly* and *Iqbal*. And, conclusory allegations that the Government used or authorized the use of the "Samsung Galaxy s6 Smartphone" in a manner that infringes Plaintiff's patents are likewise insufficient, as such "[t]hreadbare recitals of the elements of a cause of action, supported by mere conclusory statements, do not suffice." *Iqbal*, 556 U.S. at 678; *see also Sioux Honey Ass'n*, 672 F.3d at 1062 (holding that a complaint "require[s] more than labels and conclusions").

For these reasons, the court has determined that the patent infringement allegations contained in ¶¶ 161–67 of the August 10, 2017 Fifth Amended Complaint must be dismissed under RCFC 12(b)(6).

f. Patent Infringement Allegations Concerning The '033 Patent Must Be Dismissed Under RCFC 12(b)(1).

The Government argues that patent infringement allegations concerning the '033 Patent should be dismissed under RCFC 12(b)(1), because "this patent was surrendered when it was reissued as [the '891 Patent] and [the '990 Patent]." 10/20/17 Gov't Mot. at 22.

An application for reissue of a patent constitutes an offer to surrender the patent. *See* 35 U.S.C. § 251(a) ("[T]he Director shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent[.]"). "The surrender of the original patent . . . take[s] effect upon the issue of the reissued patent." 35 U.S.C. § 252. Therefore, as a matter of law, "[a]n original patent cannot be infringed once a reissue patent has issued, for the original patent is surrendered . . . [and t]he original claims are dead." *Seattle Box Co., Inc. v. Indust. Crating & Packing, Inc.*, 731 F.2d 818, 827 (Fed. Cir. 1984).

In this case, on two occasions, Plaintiff applied for reissuance of the '033 Patent via the '837 Application and the '853 Application, thereby offering to surrender the '033 Patent in accordance with 35 U.S.C. § 251(a). 2/12/16 Am. Compl. Ex. G, H. Thereafter, the USPTO issued both of these reissue applications, as the '891 Patent and the '990 Patent, respectively, on January 1, 2013 and February 12, 2013. 2/12/16 Am. Compl. Ex. G, H. As such, the '033 Patent was surrendered as of January 1, 2013, *i.e.*, the earliest reissue date. *See* 35 U.S.C. § 252 ("The surrender of the original patent . . . take[s] effect upon the issue of the reissued patent."). Therefore, the court does not have jurisdiction to adjudicate patent infringement allegations concerning the '033 Patent, because the '033 Patent is no longer a "patent of the United States." *See* 35 U.S.C. §§ 251(a), 252; *see also* 28 U.S.C. § 1498(a) (requiring "an invention described in and covered by a patent of the United States").

For these reasons, the court has determined that patent infringement allegations of the August 10, 2017 Fifth Amended Complaint concerning the '033 Patent[30] failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these allegations of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

g. Patent Infringement Allegations Concerning Unissued Patent Applications And Pre-Issuance Use Or Manufacture Must Be Dismissed Under RCFC 12(b)(1).

The Government argues that patent infringement allegations concerning the '839 Application and pre-issuance use or manufacture of the '439 Patent should be dismissed under RCFC 12(b)(1). 10/20/17 Gov't Mot. at 23.

The '839 Application has not issued, nevertheless the Fifth Amended Complaint alleges that the Government "infringed, and continues to infringe" claims of the '839 Application. 8/10/17 Am. Compl. ¶ 91. In addition, the '439 Patent issued on March 7, 2017, but the Fifth Amended Complaint alleges infringement of the '439 Patent, based on Government "programs" that were cancelled in April 2014, almost three years prior to issuance of the '439 Patent. *Compare* 8/10/17 Am. Compl. ¶¶ 315–16, *with* 10/20/17 Gov't Mot. Ex. 22 (a June 10, 2014 United States Government Accountability Office Report, explaining the DHS's decision to cancel the "BioWatch Gen-3" program in April 2014). In addition, the Fifth Amended Complaint alleges infringement of the '439 Patent, based on NSF grants that expired prior to issuance of the '439 Patent. *Compare* 8/10/17 Am. Compl. ¶¶ 184–85, 199–200, 260–61, 275–76, 280–81, 295–96, 305–06, *with* 10/20/17 Gov't Mot. Ex. 6–8, 10, 12.

The court's jurisdiction under 28 U.S.C. § 1498(a) is limited to allegations "against the [G]overnment arising out of post-issuance [G]overnment use [or manufacture] of an invention." *Hornback v. United States*, 601 F.3d 1382, 1386 (Fed. Cir. 2010) ("The language of section 1498(a) is mandatory, and therefore grants the [United States] Court of Federal Claims exclusive jurisdiction to hear all claims against the [G]overnment arising out of post-issuance [G]overnment use of an invention.").

For these reasons, the court has determined that patent infringement allegations of the August 10, 2017 Fifth Amended Complaint concerning the '839 Application[31] and pre-issuance

[30] Infringement of the '033 Patent is alleged in ¶¶ 91–92 of the August 10, 2017 Fifth Amended Complaint, the relevant portions of which the court has highlighted in purple in the attached Court Exhibit B. These paragraphs, however, contain patent infringement allegations concerning other patents and therefore are dismissed to the extent they concern the '033 Patent.

[31] Infringement of the '839 Application is alleged in ¶¶ 91–92 of the August 10, 2017 Fifth Amended Complaint, the relevant portions of which the court also has highlighted in purple in the attached Court Exhibit B. These paragraphs, however, contain patent infringement allegations concerning other patents and therefore are dismissed to the extent they concern the '839 Application.

use or manufacture of the '439 Patent[32] failed to satisfy Plaintiff's burden to establish jurisdiction under 28 U.S.C. § 1498(a). Accordingly, these allegations of the Fifth Amended Complaint must be dismissed under RCFC 12(b)(1).

h. Patent Infringement Allegations Concerning The '761, '280, And '189 Patents Must Be Dismissed Under RCFC 12(b)(6).

Finally, the Government argues that patent infringement allegations concerning the '761, '280, and '189 Patents should be dismissed under RCFC 12(b)(6), because the Fifth Amended Complaint "alleges no infringement of any claims of these patents." 10/20/17 Gov't Mot. at 23.

With regard to the '761, '280, and '189 Patents, the Fifth Amended Complaint alleges:

> Upon information and belief, the United States has infringed, and continues to infringe, . . . Plaintiff's Tangible Patented Claimed Inventions of . . . [the '761, '280, and '189 Patents.]
>
> * * *
>
> As a result of contracts, agreements, procurements, and grants, for the development and commercialization of Plaintiff's tangible patented claimed inventions, the United States . . . has used, authorized the use, manufactured and developed, without license or legal right, or authorization and consent, Plaintiff's tangible patented claimed inventions as described in and covered by the Plaintiff's . . . '761, '280, . . . [and] '189 . . . [P]atents.

8/10/17 Am. Compl. ¶¶ 91–92.

To survive a motion to dismiss under RCFC 12(b)(6), "[t]here must be some allegation of specific services or products of the defendants which are being accused." *Addiction and Detoxification Inst. L.L.C. v. Carpenter*, 620 F. App'x 934, 937 (Fed. Cir. 2015). The Fifth Amended Complaint, however, does not contain any allegation about how the '761, '280, and '189 Patents were infringed and by what action of the Government.

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[32] Infringement of the '439 Patent is alleged in ¶¶ 91–92, 96–97, 101–02, 106–07, 111–12, 116–17, 121–22, 126–27, 131–32, 136–37, 141–42, 146–47, 151–52, 156–57, 161–67, 171–72, 176–80, 184–85, 189–90, 194–95, 199–200, 204–05, 209–10, 214–15, 219–20, 224–26, 230–31, 235–36, 240–41, 245–46, 250–51, 255–56, 260–61, 265–66, 270–71, 275–76, 280–81, 285–86, 290–91, 295–96, 300–01, 305–06, 310–11, 315–16, 320–21, 325–26, 330–31, 335–36, 340–41, 345–46, 350–51, 355–56, 360–61, and 365–66 of the August 10, 2017 Fifth Amended Complaint, the relevant portions of which the court has highlighted in pink in the attached Court Exhibit B, if not otherwise highlighted in a difference color. These paragraphs, however, contain patent infringement allegations concerning other patents and therefore are dismissed to the extent they concern the '439 Patent. If Plaintiff can identify post-issuance activity incorporated within these paragraphs that is not otherwise dismissed, the court will reconsider dismissal of those relevant portions.

For these reasons, the court has determined that the patent infringement allegations of the August 10, 2017 Fifth Amended Complaint concerning the '761, '280, and '189 Patents must be dismissed under RCFC 12(b)(6).[33]

V. CONCLUSION.

For the reasons discussed herein, the Government's October 20, 2017 Motion For Partial Dismissal, pursuant to RCFC 12(b)(1) and 12(b)(6), is granted-in-part and denied-in-part. Plaintiff's November 17, 2017 Motion For Leave To File A Motion For Summary Judgment, is denied, as the Government "has not had an opportunity to make full discovery." *Celotex Corp. v. Catrett*, 477 U.S. 317, 326 (1986).

The court will convene a telephone status conference within the next two weeks to identify what, if any, patent infringement allegations are viable and may be adjudicated, and how the parties propose proceeding.

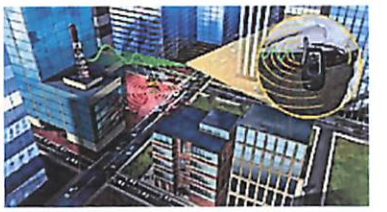
IT IS SO ORDERED.

SUSAN G. BRADEN
Chief Judge

[33] Infringement of the '761, '280, and '189 Patents is alleged in ¶¶ 91–92 of the August 10, 2017 Fifth Amended Complaint, the relevant portions of which the court also has highlighted in purple in the attached Court Exhibit B. These paragraphs, however, contain patent infringement allegations concerning other patents and therefore are dismissed to the extent they concern the '761, '280, and '189 Patents.

Appendix II

Cell-All: Super Smartphones Sniff Out Suspicious Substances



Years ago, if you wanted to take a picture, you needed a dedicated camera. You needed to buy batteries for it, keep it charged, learn its controls, and lug it around. Today, chances are your cell phone is called a "smartphone" and came with a three-to-five megapixel lens built-in—not to mention an MP3 player, GPS, or even a bar code scanner.

This Swiss Army knife trend represents the natural progression of technology—as chips become smaller and more advanced, cell phones continue to absorb new functions. Yet, in the future, these new functions may not only make our lives easier, they could also protect us—and maybe even save our lives.

The Cell-All initiative may be one such savior. Spearheaded by the Department of Homeland Security's (DHS) Science and Technology Directorate (S&T), Cell-All aims to equip your cell phone with a sensor capable of detecting deadly chemicals at minimal cost—to the manufacturer (a buck a sensor) and to your phone's battery life. "Our goal is to create a lightweight, cost-effective, power-efficient solution," says Stephen Dennis, Cell-All's program manager.

How would this wizardry work? Just as antivirus software bides its time in the background and springs to life when it spies suspicious activity, so Cell-All regularly sniffs the surrounding air for certain volatile chemical compounds.

When a threat is sensed, a virtual *ah-choo!* ensues in one of two ways. For personal safety issues such as a chlorine gas leak, a warning is sounded; the user can choose a vibration, noise, text message, or phone call. For catastrophes such as a sarin gas attack, details—including time, location, and the compound—are phoned home to an emergency operations center.

While the first warning is beamed to individuals—a grandmother taking a siesta or a teenager hiking through the woods—the second warning works best with crowds. And that's where the genius of Cell-All lies—in crowdsourcing human safety.

Currently, if a person suspects that something is amiss, he *might* dial 9-1-1, though behavioral science tells us that it's easier to do nothing. If he does do something, it may be at a risk to his own life. And as is often the case when someone phones in an emergency, the caller may be frantic and difficult to understand, diminishing the quality of information that's relayed to first responders. An even worse scenario: the person may not even be aware of the danger, like the South Carolina woman who last year drove into a colorless, odorless, and poisonous ammonia cloud.

In contrast, anywhere a chemical threat breaks out—a mall, a bus, subway, or office—Cell-All will alert the authorities automatically. Detection, identification, and notification all take place in less than 60 seconds. Because the data are delivered digitally, Cell-All reduces the chance of human error. And by activating alerts from many people at once, Cell-All cleverly avoids the longstanding problem of false positives. The end result: emergency responders can get to the scene sooner and cover a larger area—essentially anywhere people are—casting a wider net than stationary sensors can.

But what about your privacy? Does this always-on surveillance mean that the government can track your precise whereabouts whenever it wants? To the contrary, Cell-All will operate only on an opt-in basis and will transmit data anonymously. "Privacy is as important as technology," avers Dennis. "After all, for Cell-All to succeed, people must be comfortable enough to turn it on in the first place."

For years, the idea of a handheld weapons of mass destruction detector has engaged engineers. In 2007, S&T called upon the private sector to develop concepts of operations. Today, thanks to increasingly successful prototype demonstrations, the Directorate is actively funding the next step in R&D—a proof of principle—to see if the concept is workable.

To this end, three teams from Qualcomm, the National Aeronautics and Space Administration (NASA), and Rhevision Technology are perfecting their specific area of expertise. Qualcomm engineers specialize in miniaturization and know how to shepherd a product to market. Scientists from the Center for Nanotechnology at NASA's Ames Research Center have experience with chemical sensing on low-powered platforms, such as the

International Space Station. And technologists from Rhevision have developed an artificial nose—a piece of porous silicon that changes colors in the presence of certain molecules, which can be read spectrographically.

Similarly, S&T is pursuing what's known as cooperative research and development agreements with four cell phone manufacturers: Qualcomm, LG, Apple, and Samsung. These written agreements, which bring together a private company and a government agency for a specific project, often accelerate the commercialization of technology developed for government purposes. As a result, Dennis hopes to have 40 prototypes in about a year, the first of which will sniff out carbon monoxide and fire.

To be sure, Cell-All's commercialization may take several years. Yet the goal seems imminently achievable: Just as Bill Gates once envisioned a computer on every desk in every home, so Stephen Dennis envisions a chemical sensor in every cell phone in every pocket, purse, or belt holster. If it's not already the case, our smartphones may soon be smarter than we are.

To request more information about this story, please e-mail st.snapshots@hq.dhs.gov (mailto:st.snapshots@hq.dhs.gov).

Topics

WEAPONS OF MASS DESTRUCTION (/TOPICS/WEAPONS-MASS-DESTRUCTION)

Keywords

SCIENCE AND TECHNOLOGY (/KEYWORDS/SCIENCE-AND-TECHNOLOGY)

Last Updated: 08/01/2024

QUALCOMM®

DHS asked, "what if…"

…we wanted to provide high impact ubiquitous technology for CBRNE sensing?

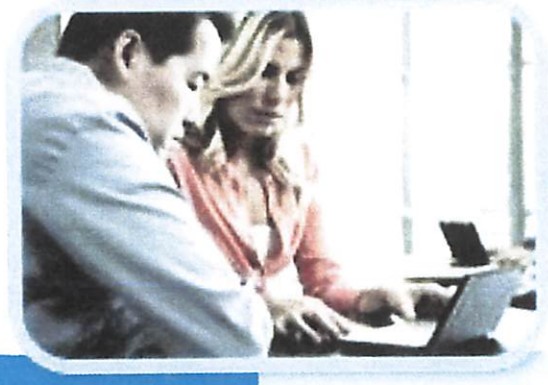
QUALCOMM®

DHS asked, "what if…"

Answer: Use commercial cellular phone ecosystem and commercial networks

QUALCOMM®

Who are the necessary stakeholders?



QUALCOMM®

How does it work?

QUALCOMM®

What's left to do?

FIRST RESPONSE COMMUNITY

- Seamless integration to their workflow
- Training in the use of Cell-All

BUSINESS

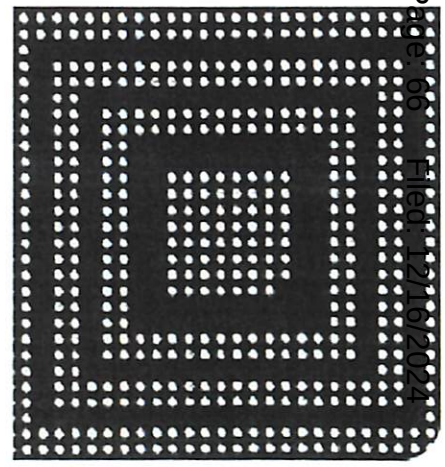
- How to make it attractive for all stakeholders

SYSTEM

- First responder and user trials
- Performance and scalability
- Enhance security for commercial use
- Refine algorithm

SENSORS

- Manufacturing Volumes
- Reproducibility
- Power
- Integration



QUALCOMM®

QUALCOMM

Government Technologies

Cell-All Ubiquitous Biological and Chemical Sensing

Ed Charbonneau
Vice President, Strategic Development
Qualcomm Government Technologies
September 24, 2012

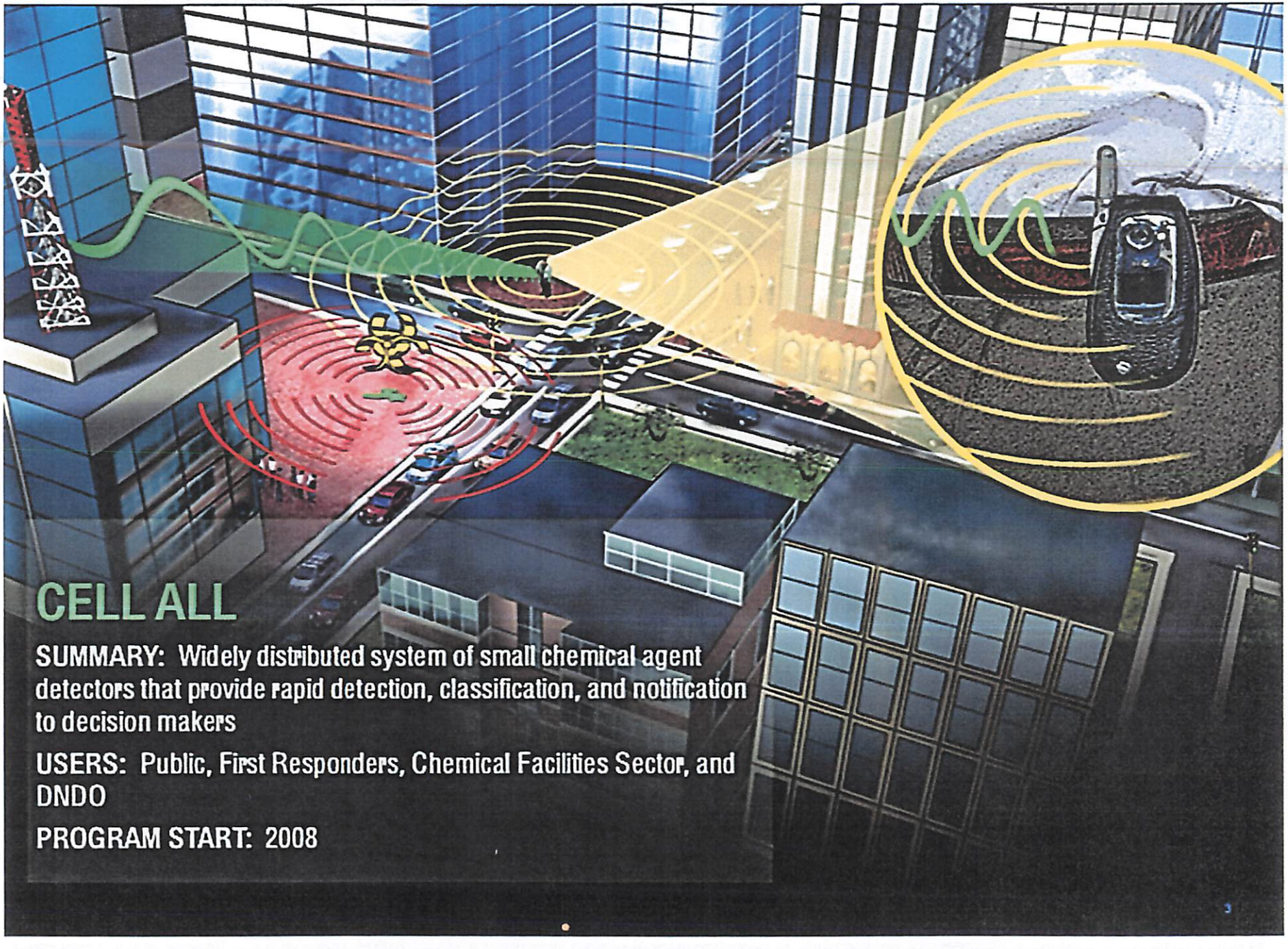
QUALCOMM

Fortune 500 Company

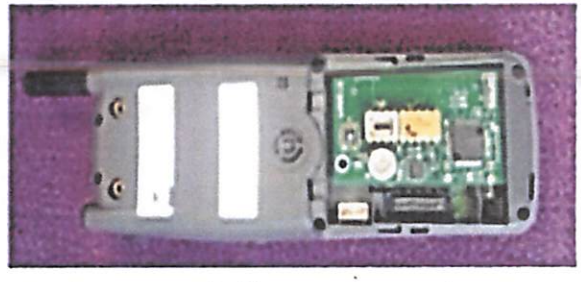
25+ years of driving the evolution of wireless technologies

Making wireless more personal, affordable and accessible to people everywhere

World's largest fabless semiconductor company, #1 in wireless



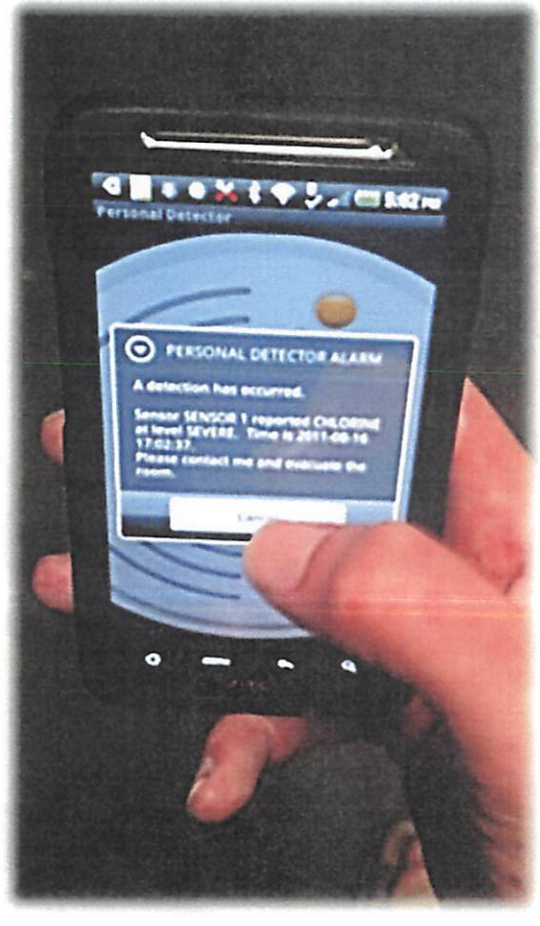
Qualcomm's Cell-All Concept



- Phase I
  - Establish miniature sensor efficacy
  - Discover limitations for cell phone integration
  - Develop first generation prototypes
  - Proof of concept: Use a development platform to integrate an existing sensor to demonstrate the ability to sense a defined set of agents
- Phase II
  - Transmit sensor data via 3G and/or Wi-Fi
  - Design a multiple sensors network for chemical profiling
  - Determine whether the viability of multiple sensor units per phone are possible
  - Explore the use of Bluetooth and other external interfaces
  - Standardize the sensor platform (internal and external interfaces, software architecture)
- Phase III
  - Provide a plan for achieving widespread acceptance by Cell-All services by subscribers, cell phone OEMs, wireless carriers, and government agencies

Cell-All Demonstrations in September 2011

- LAFD, Frank Hotchkins Memorial Training Center
  - Carbon Monoxide
  - Personal Protection Scenario
  - Audio Alarm
  - In Case of Emergency (ICE) Alerts
- FEMA, Center for Domestic Preparedness
  - Toxic Chemical Agents
  - Hazardous Materials Response Team Scenario
  - Network response
  - Geographic-based visualization



Ideas for Industry and Labs

- Integrating sensors into cell phones must take into consideration the cell phone environment
  - Handsets are price sensitive → component cost of sensor must be <$1.00
  - Size → 3-15 sensors on a <6x6x2mm optimally 2x2x1mm, including components necessary for support (e.g., fans, vents, filters, dwell, etc.)
  - Power consumption → sensor must not significantly affect the phone's battery life
  - Processor → leverage the phone's processor instead of adding a processor to a sensor
  - Manufacturing → sensor must tolerate manufacturing temperatures as high as 260°C
  - Packaging → sensors must withstand vibration, drops, and abuse of a typical handset
  - Software → must be release controlled and compatible with the OS
  - Sensor placement → does not have to be on the inside of a cell phone (e.g., Sharp's Pantone smartphone with radiation sensor)
- Learn from the evolution of other sensors in the cell phone (e.g., accelerometer, gyroscope, compass, camera, etc.)

QUALCOMM

Government Technologies

The Sharp Pantone 5 107SH, a smartphone with built in radiation detector

Photographs courtesy of "The Verge"

Cell-All Team

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NASA Ames Research Center
Jing Li: 650-604-4352

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Debra J. Deininger, 720-494-8401, ddeininger@synkera.com

Sensor Development
Seacoast Science, Inc.
Louis Haerle, 760-268-0083, louis@seacoastscience.com

Data Consolidation and Visualization
NC4
Chris Needs, 310-606-4402, chris.needs@nc4.us

Systems Design and Integration
Qualcomm Incorporated
Kathy de Paolo, 858-658-2988, kdepaolo@qualcomm.com

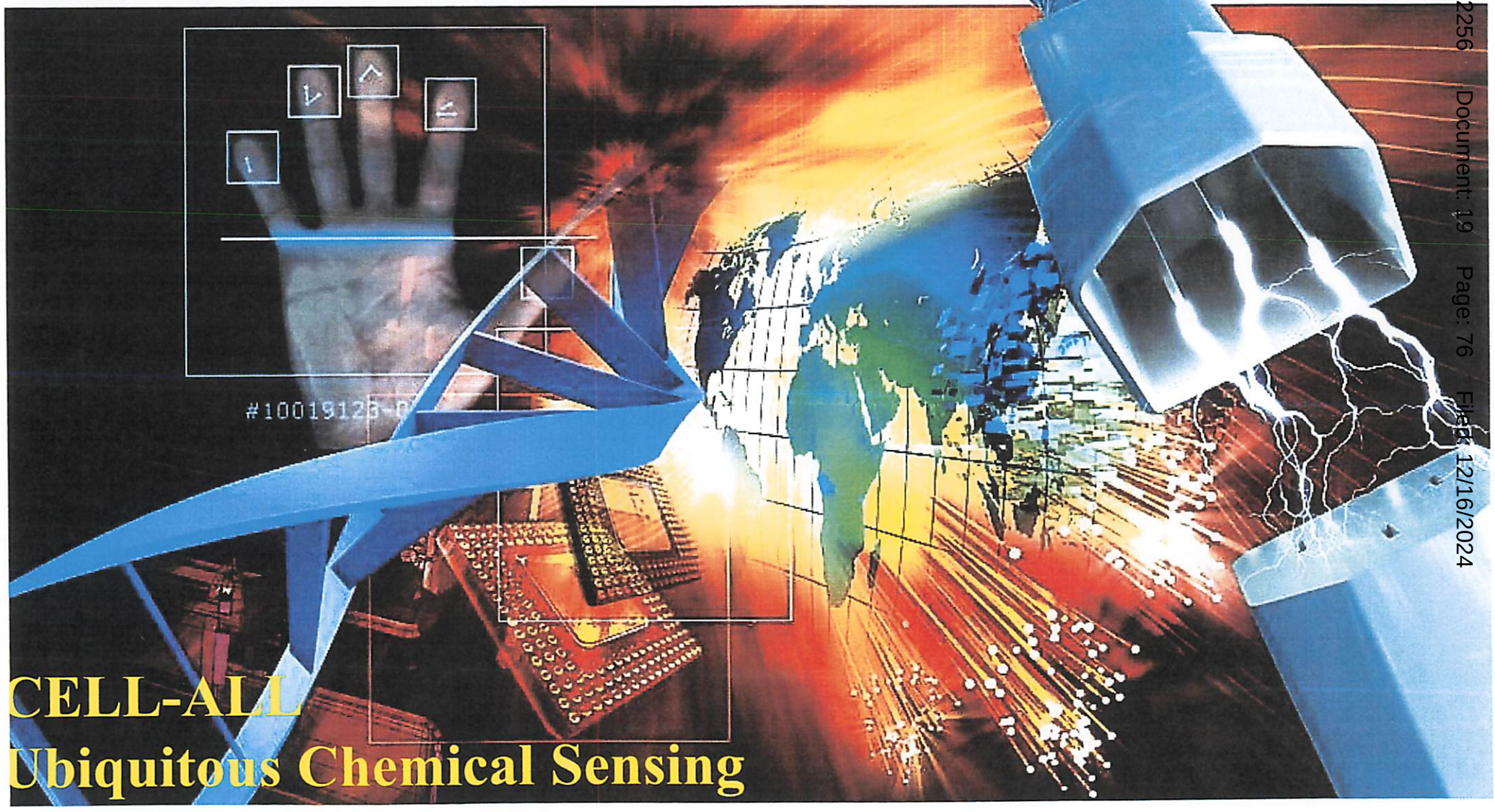
Thank you for attending

HSARPA

Homeland Security Advanced Research Projects Agency

Homeland Security

Science and Technology



CELL-ALL

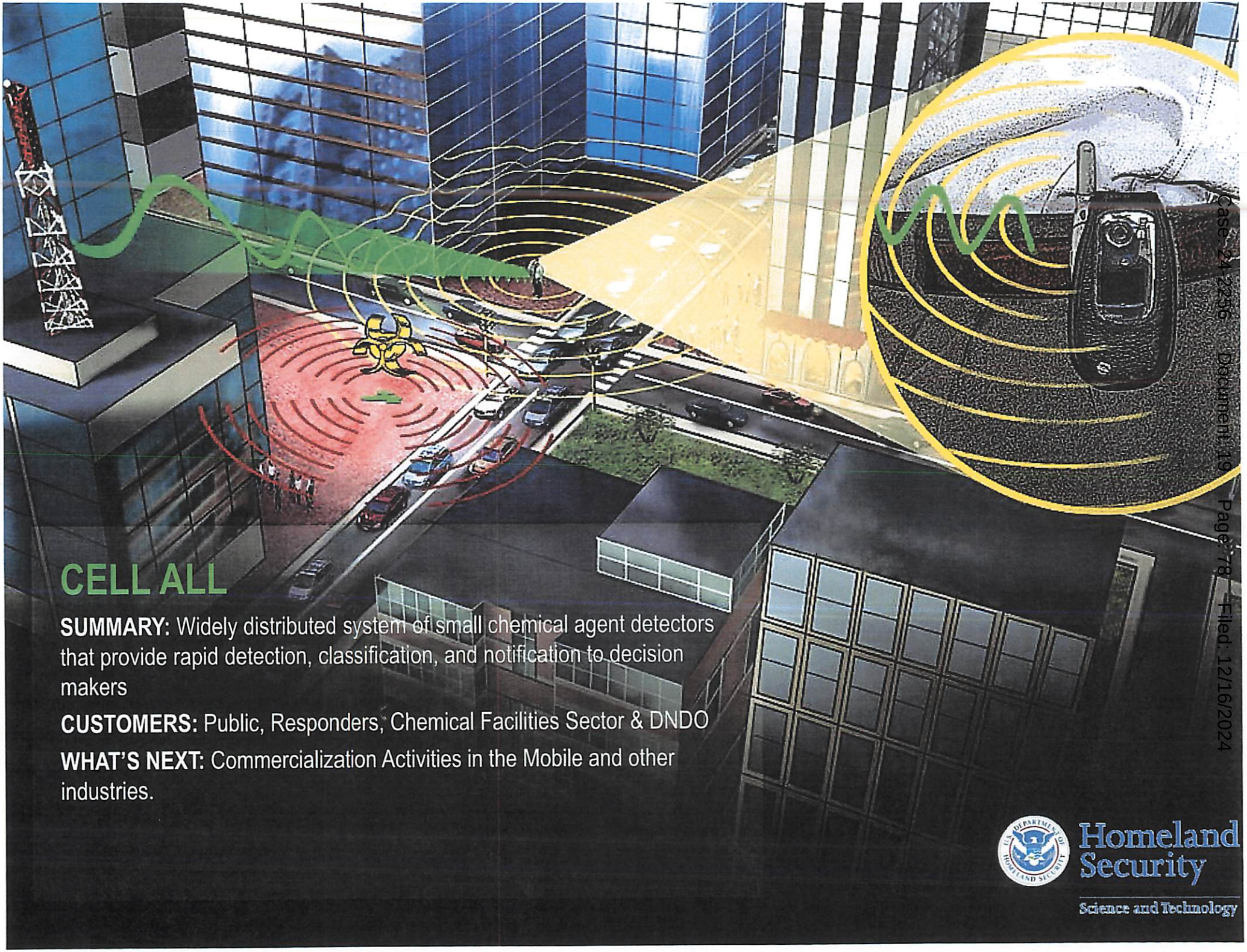
Ubiquitous Chemical Sensing

HOMELAND SECURITY ADVANCED RESEARCH PROJECTS AGENCY

- Promote revolutionary changes in technology
- Accelerate technology prototyping
- Advance the development, testing, and evaluation
- Deployment of critical home security technologies

Homeland Security

Science and Technology



CELL ALL

SUMMARY: Widely distributed system of small chemical agent detectors that provide rapid detection, classification, and notification to decision makers

CUSTOMERS: Public, Responders, Chemical Facilities Sector & DNDO

WHAT'S NEXT: Commercialization Activities in the Mobile and other industries.

Homeland Security

Science and Technology

Motivations to Improve Detection

- Large, expensive, stationary systems represent state of the art chemical agent detection
- Variety of less-expensive handheld systems available as separate systems for mobile response
- Geographic coverage of these systems limited to specific areas of deployment
- Sampling may not reflect actual environment where people are actually located

Homeland Security

Science and Technology

Opportunity for Innovation

Large, dynamic sensing system

- Miniaturized, effective sensor capability
- Integrate new low-cost sensing into common devices
  - Move sensing applications to the edge
- Harvest benefits of network effects and crowd sourcing
- Opt-In for monitored systems for Privacy Protection
- Integrate with 300+ million cell phones now used in U.S.
- Leverage billions of dollars spent each year in sensor, carrier network and cell phone development
  - Wireless Industry, Industrial Sensing, Defense Investments

Result: Early indications and warning for hazardous chemical events

Homeland Security

Science and Technology

Technical Approach

Revolutionary Technology & Accelerated Prototyping

Embeddable Miniature Sensors

- Sample collection
- Reusable devices with lifetimes of at least 18 months
- Functional sensor sensitivity & selectivity in the environment
- Prototype concepts for integrated sensing Devices
- Methods and concepts for disseminating of sensor information

Accelerated Prototyping & Advance Development, Test and Evaluation

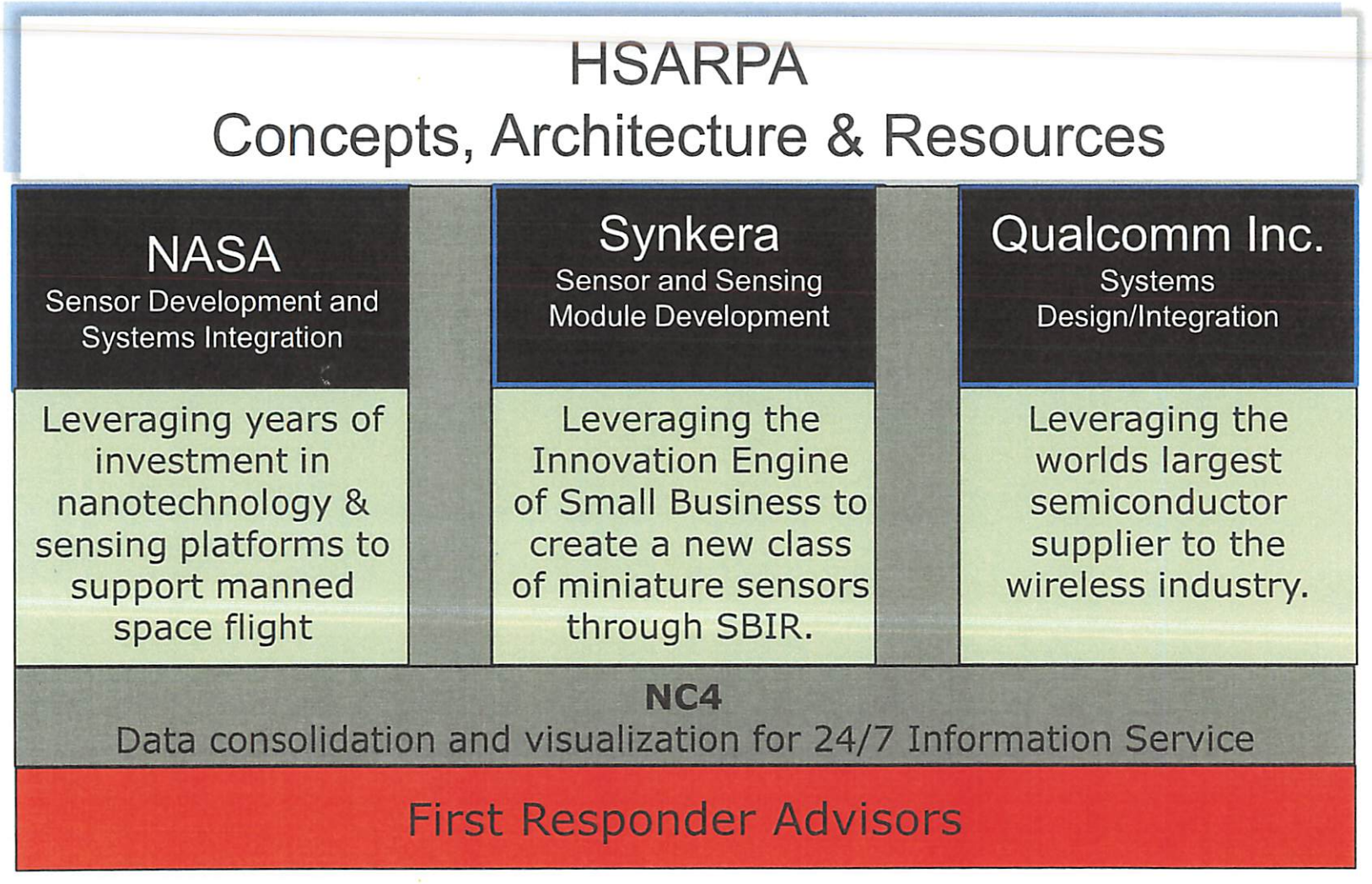
Sensing Network to Significantly Expand Coverage

- Investigate Sensor Performance in a Larger Scale Networks
- Operational Evaluation for Responder Environments
- Concepts of Operation for Ubiquitous Sensing

Homeland Security

Science and Technology

CellAll Team



Homeland Security

Science and Technology

Revolutionary Technology & Advanced Prototyping

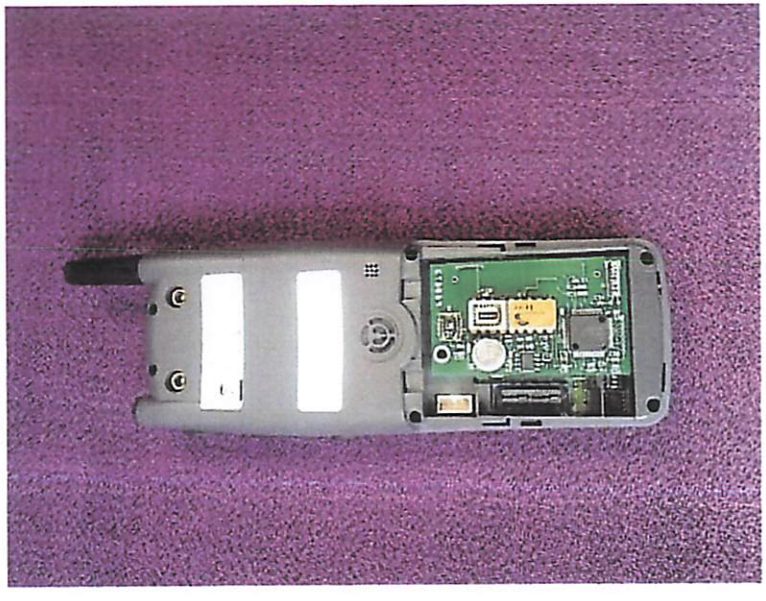
- Established miniature sensor efficacy
- Discovered parameters for cell phone integration
- Developed first generation prototypes
- Proof of concept demonstrations
  - NASA – Leveraging nanosensor work for space missions to further miniaturizing space-qualified integrated sensing system for detection of chemical agents using smartphones.
  - Synkera – Leveraging SBIR funded development of miniature sensors.
  - Qualcomm – Using existing hardware platform to integrate existing sensor & demonstrate ability to sense chemical agents

Homeland Security

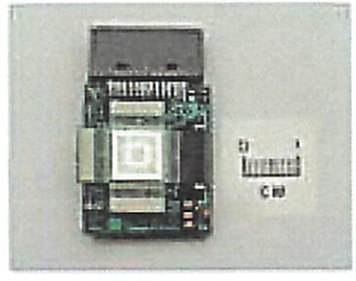
Science and Technology

Phase I Prototypes

Qualcomm FFA



NASA ARC nanosensor module for iPhone integration



iPhone Specifications

Homeland Security

Science and Technology

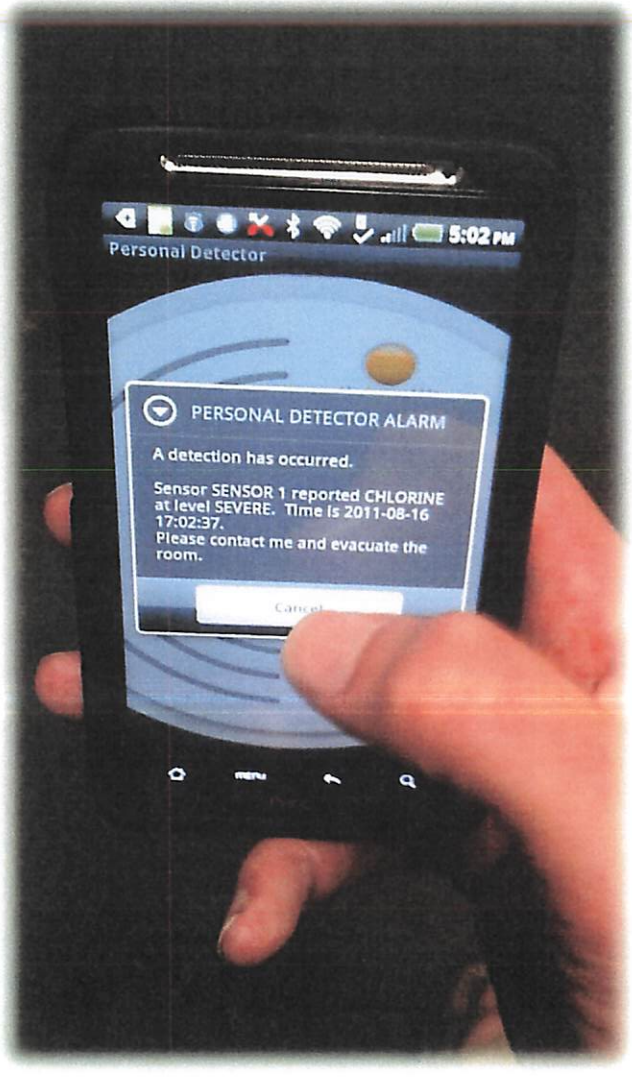
Phase II Prototype Goals

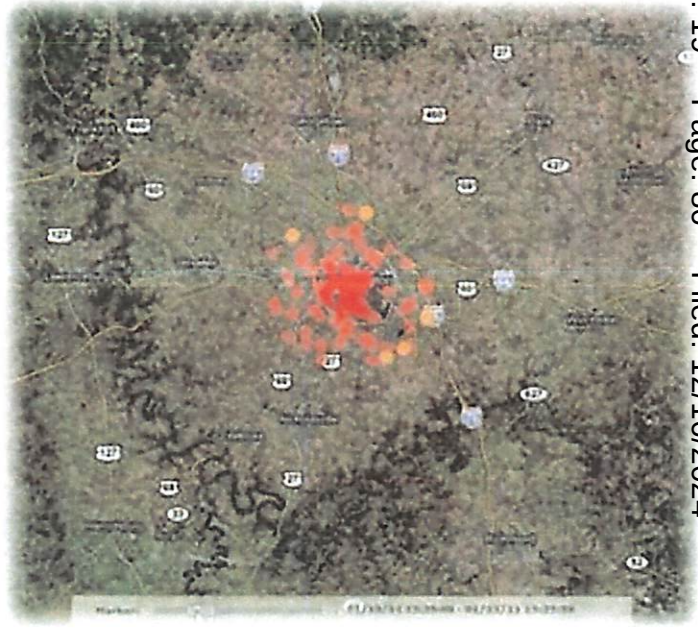
- Achieve greater number of total prototype devices at reasonable unit cost
- Sensor data transmission via 3g and/or Wi-Fi
- Multiple sensors network for chemical profiling
- Decouple chemical sensor from phone.
- Multiple sensor units per phone are possible
- Bluetooth/Proprietary Interfaces
- Standardize sensor platforms
- Increase opportunities for participation

Homeland Security

Science and Technology

Phase II Prototypes





Homeland Security
Science and Technology

Commercial Opportunities

- Focus Group Analysis for Cell Phone Based Sensing
  - Personal Protection Applications Sell
  - Privacy is Important
  - Reliance on Local Officials
- Multiple Market Business Models
- Spin-off Sensor Applications
  - Medical Diagnostics
  - Multi-gas Detectors for Firefighter Applications

Homeland Security

Science and Technology

Demonstrations

- Domestic Preparedness Application
  - Toxic Chemical Agents (Public & Industrial Safety)
  - Hazardous Materials Response Team Scenario
  - Network response
  - Geographic-based visualization

- LAFD, Frank Hotchkins Memorial Training Center
  - Carbon Monoxide (Personal Safety)
  - Personal Protection Scenario - Audio Alarm
  - In Case of Emergency (ICE) Alerts
  - Network Command/Control

Homeland Security

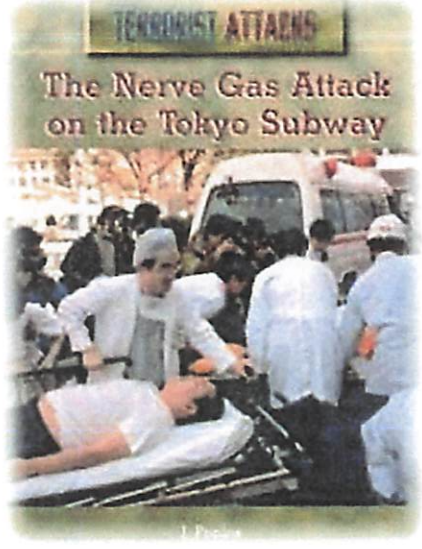
Science and Technology

Enabling a Spectrum of Applications

Personal Safety

Industrial Safety
(Critical Infrastructure)

Public Safety



Homeland Security
Science and Technology

Status

Government Funding has Ended

Cost Shared Commercial Funding Continues

Venture Capital Active

Niche Products Available Now

First Large Scale Commercial Product Launch within 1 Year

Homeland Security

Science and Technology

Appendix III

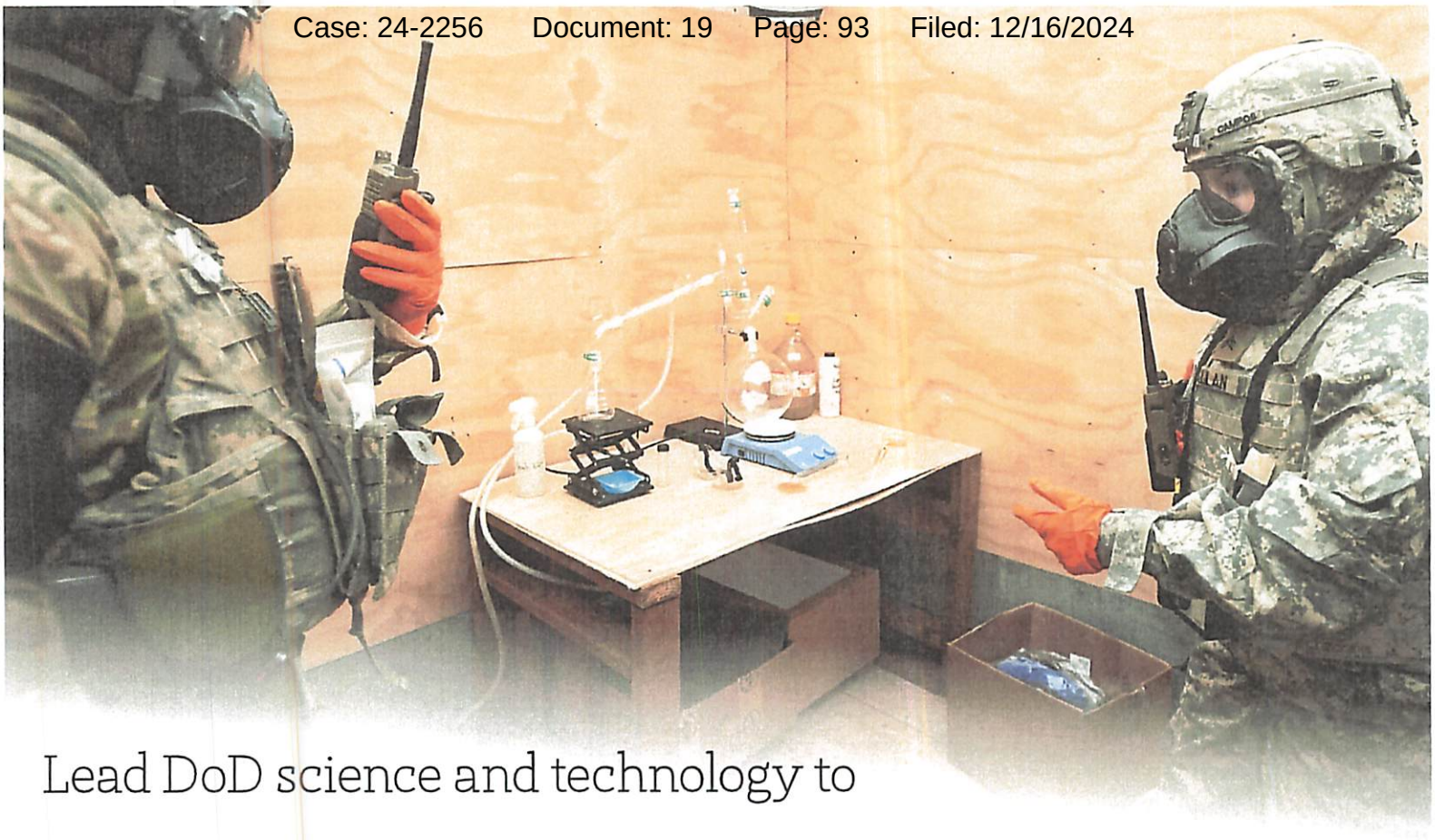
JSTO in the News

DTRA.mil

February 2020 | Vol. 10 No. 2

Failure is an option: DTRA's CBOA event is a vital step of the acquisition process

ATAK in the field



Lead DoD science and technology to anticipate, defend, and safeguard against chemical and biological threats for the warfighter and the nation.

DEFENSE THREAT REDUCTION AGENCY

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www.dtra.mil

Find us on social media: @doddtra

Download our eBook – keyword: DTRA

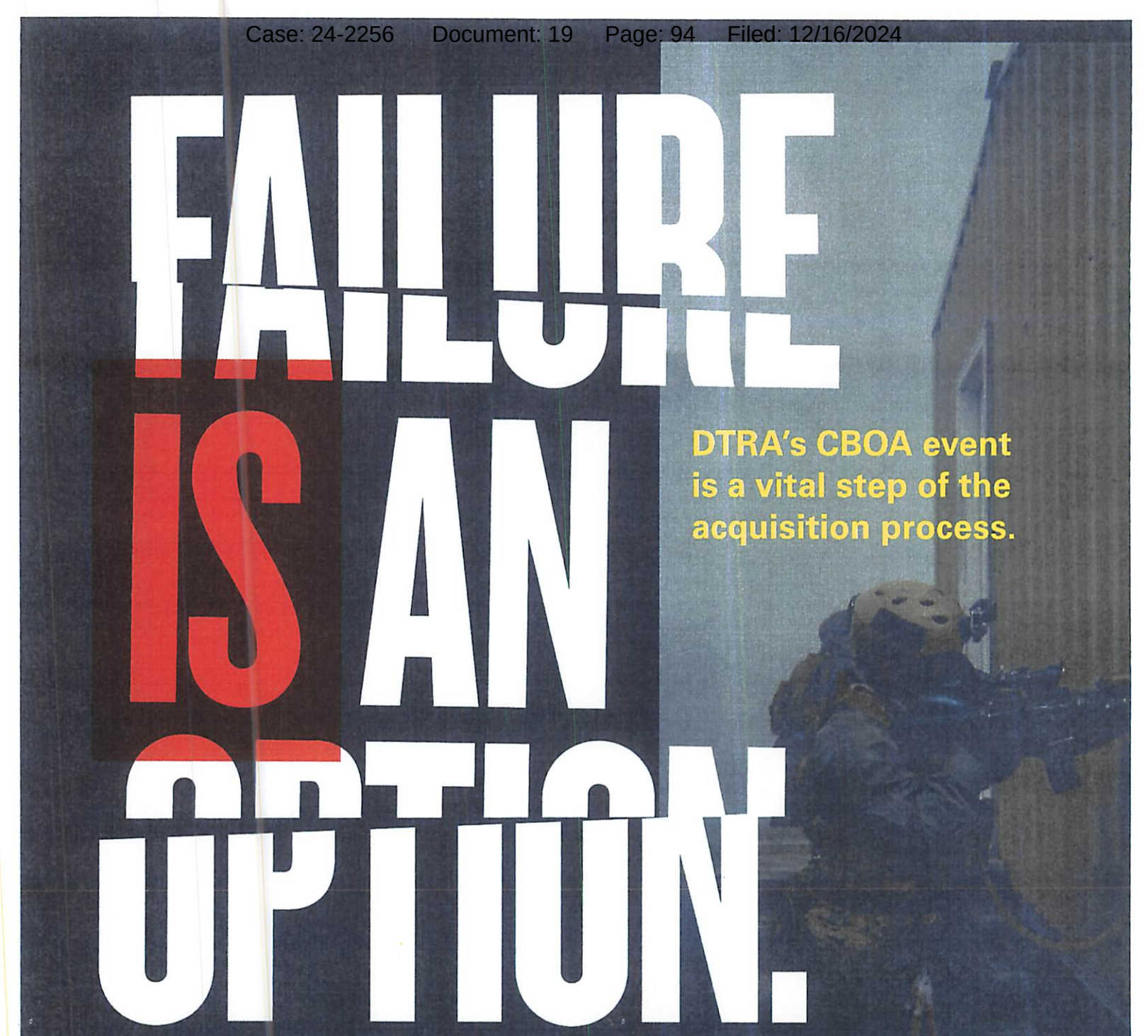
Front cover: A simulated crime scene during a training exercise at Joint Base McGuire-Dix-Lakehurst, N.J., on October 23, 2019. New Jersey National Guard photo by Mark C. Olsen.

Inside cover: Photo by KJH Studios (www.kristijanhoover.com).

Back cover: An activity at the Urban Advanced Technologies Exercise 2018, which took place on March 22, 2018. U.S. Marine Corps photo by Lance Cpl. Robert Alejandre.

FAILURE IS AN OPTION.

DTRA's CBOA event is a vital step of the acquisition process.



The Defense Threat Reduction Agency (DTRA) values and encourages evaluation of technology prototypes by warfighters and other end users while the prototypes are still in development. DTRA's approach in evaluating prototypes is best exemplified through its annual Chemical and Biological Operational Analysis (CBOA) event, which provides a realistic venue for technology developers to observe how their prototypes function in an operationally relevant environment. CBOA supports the construct of modernizing key capabilities, which is part of DoD's "Build a More Lethal Force" line of effort. After a technology prototype is assessed, the DoD may consider acquiring the prototype or recommend utility-related design improvements to the developer. Sometimes, the prototype may not have utility for the military — and this "failure" in utility is acceptable because the end user's assessment informs

Figure 1. Members of the U.S. Army's 101st Airborne Division secure a mock laboratory and survey their next target. Photo courtesy of DTRA.

Figure 2. Service members from the U.S. Army's 101st Airborne Division perform a maneuver operation in full Mission Oriented Protective Posture towards their next target at the Volkstone site at Camp Dawson, W.Va.; Figure 3. Paper On Demand placed on the shoulder to warn of a hazard; Figure 4. RINI Chemical Suit Cooling System. Photos courtesy of DTRA.

the developer of functional changes needed when it is less expensive to make them. Technology assessments at CBOA do not carry repercussions toward future acquisition decisions. Feedback from participants inform current and future capability documents that drive design decisions, expedite the acquisition process, and increase the likelihood of success across these domains: doctrine, organization, training, material, leader development, personnel, and facilities.

In August 2019, seventy-nine warfighters participated in a hands-on field experiment to evaluate prototypes in chemical and biological defense (see Figures 1–11). The six-day experience took place at Camp Dawson, West Virginia, and was the second annual CBOA event hosted by DTRA. CBOA employed scenario-based, live field experiments to view each new technology prototype from both the warfighter and adversary perspectives to identify improvements and weaknesses in the prototypes. The 2019 CBOA also included a User Feedback Tent for Technology Concepts.

Warfighters who participated represented several military services: U.S. Army's 101st Airborne Division; U.S. Army's 20th Chemical, Biological, Radiological, Nuclear, and Explosives Division; U.S. Marine Corps' 14th Marine Air Group; 35th Civil Support Team West Virginia Army National Guard; U.S. Navy's Explosive Ordnance Disposal; and U.S. Air Force's Research Laboratory.

Technology developers who participated represented industry, academia, and government laboratories and attended for many reasons: to reengage users in assessing prototypes refined based on feedback gathered at the 2018 CBOA event; to engage users to assess new prototypes; to explore the applicability of a new concept in chemical and biological defense; or to network and explore collaborations with other developers and DTRA.

CBOA brought together not only warfighters and technology developers but also other organizations. To aid with live scenarios, DTRA collaborated with the

5

"This week is the first time in my life I have been cold inside a chem suit…There is no way I am giving this back!"

— WARFIGHTER PARTICIPANTS ON THE RINI CHEMICAL SUIT COOLING SYSTEM

Figure 5. Geospacial collaborative environment – User Feedback Concept Tent; Figure 6. Pocket detection pouch – User Feedback Concept Tent. Photos courtesy of DTRA.

6

"We successfully trained a medic, and he was able to train one of the Marines in the field to operate and run our mock test on the Omni System. This helped to validate [that] our mobile application user interface design is simplistic and user friendly. We learned an extreme amount from the operators during our end user debrief. We were able to make changes each night and see those changes help the operators the next day."

– REPRESENTATIVE FROM GENEXPERT OMNI

Figure 7. GeneXpert Omni in use; Figure 8. Field Forward Sequencing System results; Figure 9. Waterless decontamination; Figure 10. The same Integrated Sensor Architecture (ISA) traffic (sensor status and hazards) on the Air Force, Marines, and Army common operating pictures (COPs) at the same time transiting from a simulated unclassified side, through the guard, to a simulated classified side command and control systems. Chemical, biological, radiological, and nuclear ISA sensor status was also pushed and rendered on a Multifunctional Kit. The yellow outline is the integrated-early-warning ISA hazard message rendered on all high-side COPs. All photos courtesy of DTRA.

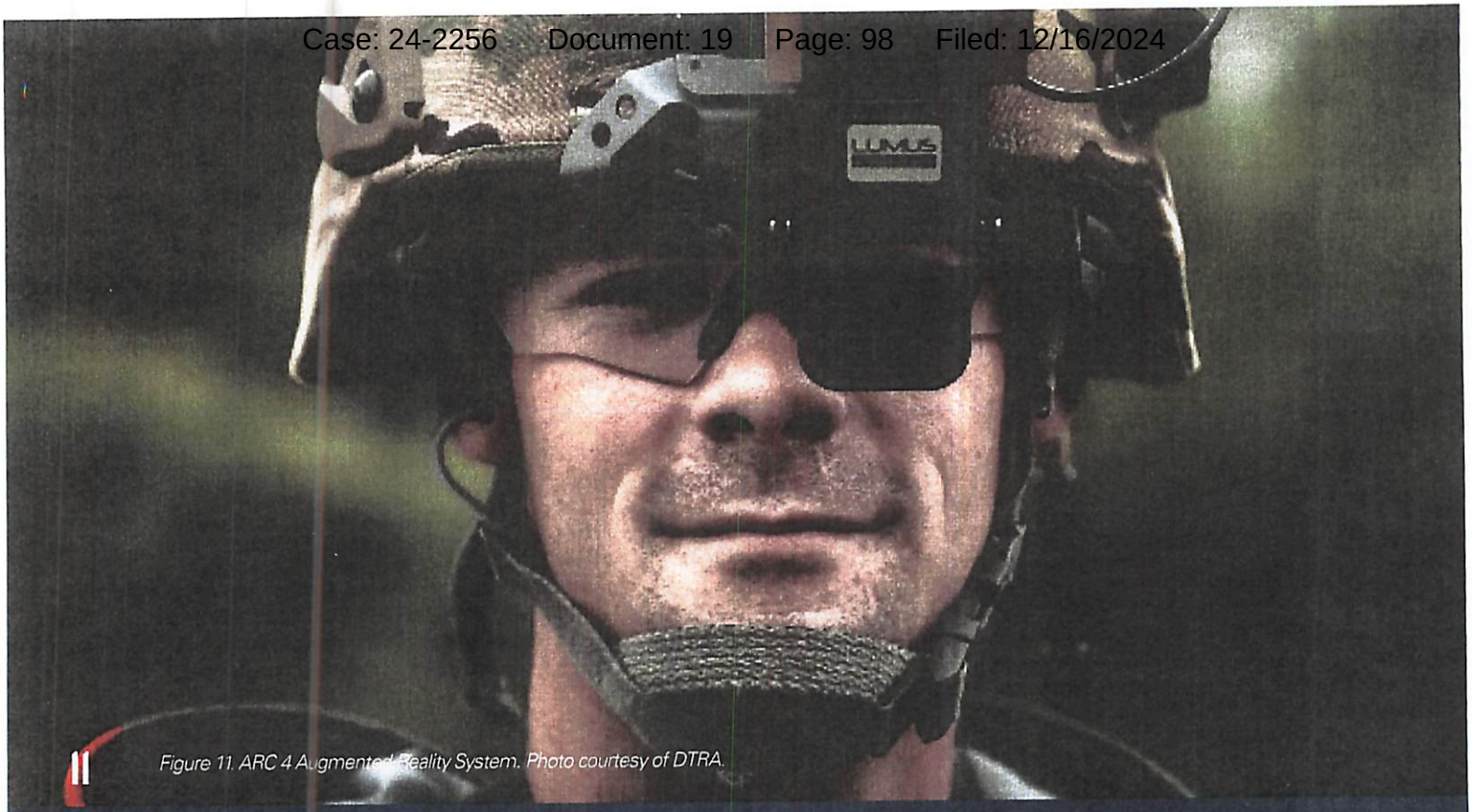


Figure 11. ARC 4 Augmented Reality System. Photo courtesy of DTRA.

Night Vision Electronic Sensors Directorate's Quick Response Branch and Unique Mission Cell, which is part of the U.S. Army's Combat Capabilities Development Command's (CCDC) Command, Control, Computers, Communications, Cyber, Intelligence, Surveillance, and Reconnaissance Center. Experts from CCDC's Chemical Biological Center provided the simulants that triggered all detection devices. The Joint Vulnerability Assessment Branch evaluated technology prototypes for vulnerabilities in computer network security and radio frequency. The U.S. Military Academy's Warfighter Technology Tradespace Methodology assessed each prototype's capabilities, logistics, usability, and training aspects.

Data collected during live scenarios included a prototype's performance, such as its ability to interact with other equipment, adaptability to chemical and biological defense, training requirements, and ease of use. Developers also learned about their prototypes' security vulnerabilities from an adversarial perspective. At the User Feedback Tent for Technology Concepts, developers received guidance on the utility or applicability of their emerging technology or idea in the chemical and biological environment.

Warfighters and technology developers reported that the collaborative experience was valuable, informative, exciting, and insightful. The 2020 CBOA will take place at Fort Carson, Colorado, from 27 to 31 July. DTRA will again bring together scientists, warfighters, and technology developers to evaluate new and emerging technologies for utility and applicability in chemical and biological defense. ●

CBOA
CHEMICAL BIOLOGICAL OPERATIONAL ANALYSIS

Review the 2020 CBOA Request for Information on beta.Sam.gov (search using the key word CBOA). Watch highlights from the last CBOA event by visiting https://vimeo.com/363621979/9e4637e7e6.

POC: Markham K. Smith, markham.k.smith.civ@mail.mil

ATAK

IN THE FIELD

CBRN INTEGRATION EQUIPS WARFIGHTERS WITH ADVANCED SITUATIONAL AWARENESS

FORGING A TACTICAL EDGE

Through collaboration and innovation, the Defense Threat Reduction Agency has integrated its powerful, hazard-awareness-and-response tools into the Android Tactical Assault Kit (or the Android Team Awareness Kit, ATAK). ATAK is a digital application available to warfighters throughout the DoD. Built on the Android operating system, ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. U.S. forces use ATAK to self-identify their locations, and their enemy's location, to visually communicate their movements to friendly forces in the area. The software has successfully aided in search-and-rescue and natural-disaster responses, such as coordinating the relief efforts following Hurricane Florence. Warfighters can now use ATAK to guide themselves to safety when confronted with a release of chemical and biological agents and radiological and nuclear threats (CBRN).

Figure 1. DTRA's CBRN plug-ins provide increased situational awareness, understanding, and decision-making abilities to ATAK users. Photos courtesy of DTRA.

Warfighters rely on digital maps and other data to guide their mission. However, a mission requires additional data when warfighters are confronted with a release of CBRN. Warfighters need to know the weather conditions in real time (e.g., wind speed and direction, stability, precipitation) to understand the potential for agent dispersal and spread. They also need to know the type of agent released, monitor their personal vitals to assess their exposure to the agent, and find a route to safety. DTRA has digital tools to help warfighters defend against CBRN, but they were often housed as stand-alone applications and not embedded in platforms regularly employed by warfighters outside of the CBRN community.

ATAK can connect to sensors on many platforms (e.g., satellites, drones, smartwatches) and has many plug-ins that warfighters can download to customize their operating environment, depending on their role or mission. ATAK's software architecture allows plug-ins to share information with other plug-ins or applications on the end-user's device. With DTRA's contribution, ATAK now includes these three CBRN plug-ins (see Figures 1–5): 1) CBRN Effects, 2) CBRN, and 3) Filter Times.

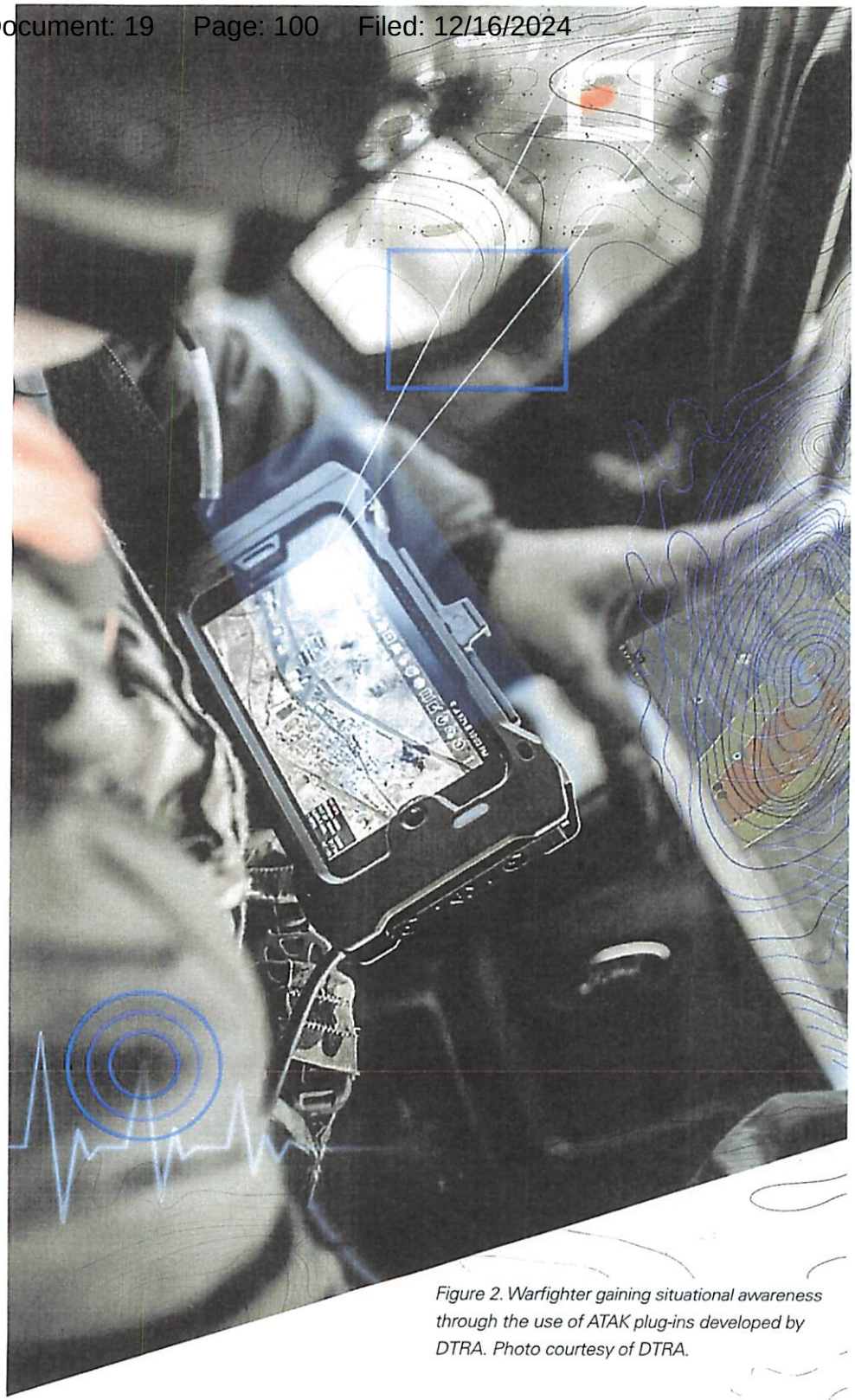


Figure 2. Warfighter gaining situational awareness through the use of ATAK plug-ins developed by DTRA. Photo courtesy of DTRA.

"WITH DTRA'S CONTRIBUTION, ATAK NOW INCLUDES THESE THREE CBRN PLUG-INS: CBRN EFFECTS, CBRN, AND FILTER TIMES."

The first plug-in, CBRN Effects, adds two capabilities to ATAK: real-time hazard prediction and vehicle navigation for CBRN events. The plug-in optimizes DTRA's Hazard Prediction and Assessment Capability to run on an end-user device in disconnected (without an internet connection) environments. When the plug-in is connected to the internet, it incorporates DTRA's Meteorological Data Server to provide warfighters with real-time weather — from domestic to global, depending on the mission — to characterize the dispersal and spread of chemical and biological warfare agents following a release. The CBRN Effects plug-in also makes use of an existing ATAK plug-in, the Vehicle Navigation System (VNS). With VNS, the CBRN Effects plug-in offers warfighters a complex routing tool that accounts for contamination and exposure, in addition to travel time, and advises the warfighter on the optimal paths to take for safety.

To add the second plug-in, CBRN, DTRA collaborated with the U.S. Army Combat Capabilities Development Command Chemical Biological Center (CCDC CBC) to implement the U.S. Army's Integrated Sensor Architecture (ISA) into ATAK. U.S. Army's ISA is used across the DoD, so DTRA and CCDC CBC built upon ISA to include sensors to capture CBRN events. ISA seamlessly integrates different sensor technologies to give warfighters the data they seek. For example, ATAK provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.

The third plug-in, Filter Times, addresses what warfighters have long asked for: real-time guidance on how long they should wear masks and assume a mission-oriented protective posture after a CBRN release. ATAK offers this guidance through the Filter Times plug-in, which instructs the warfighter when to stay near the ground, when to seek immediate help, and when to avoid contamination.

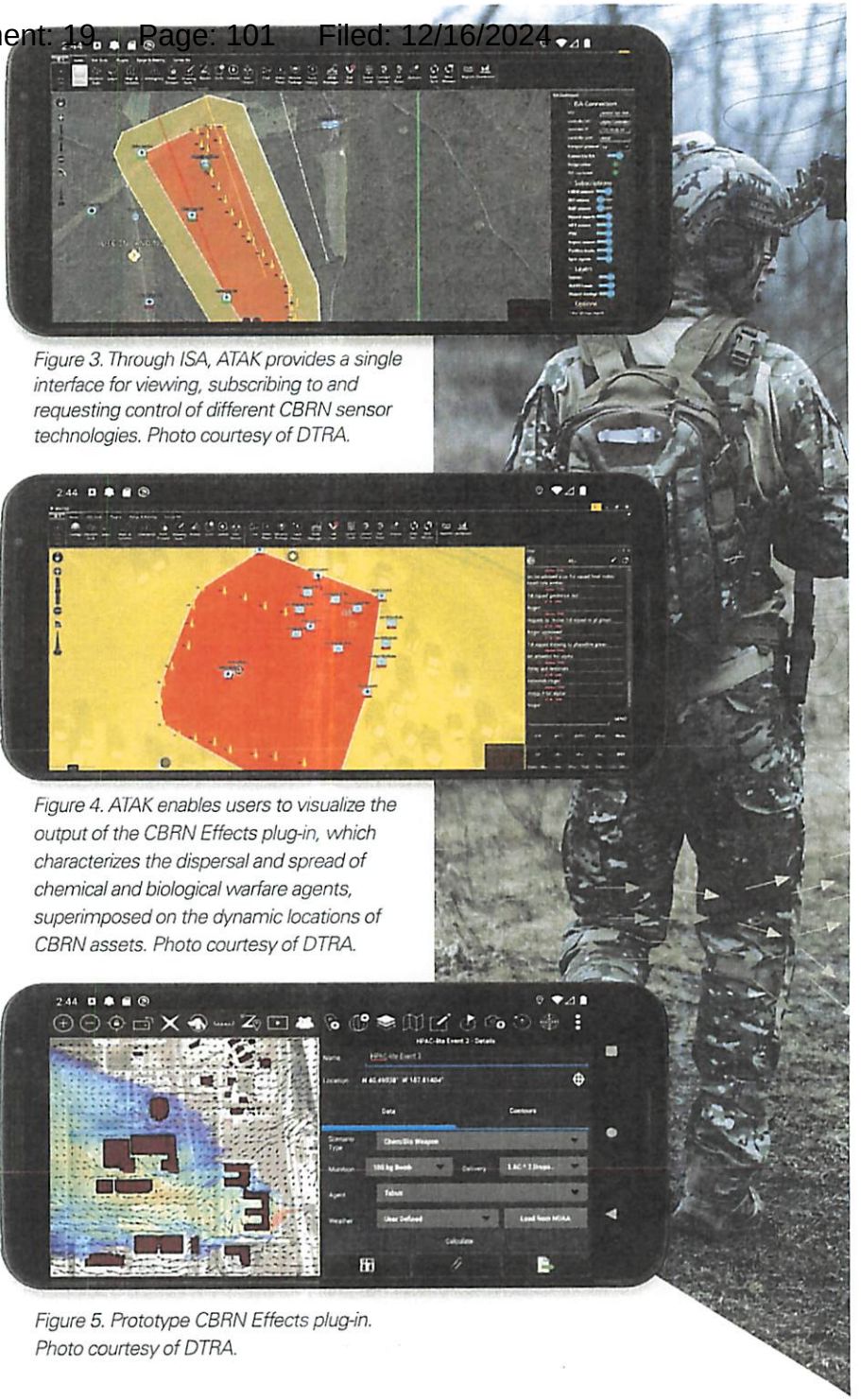


Figure 3. Through ISA, ATAK provides a single interface for viewing, subscribing to and requesting control of different CBRN sensor technologies. Photo courtesy of DTRA.

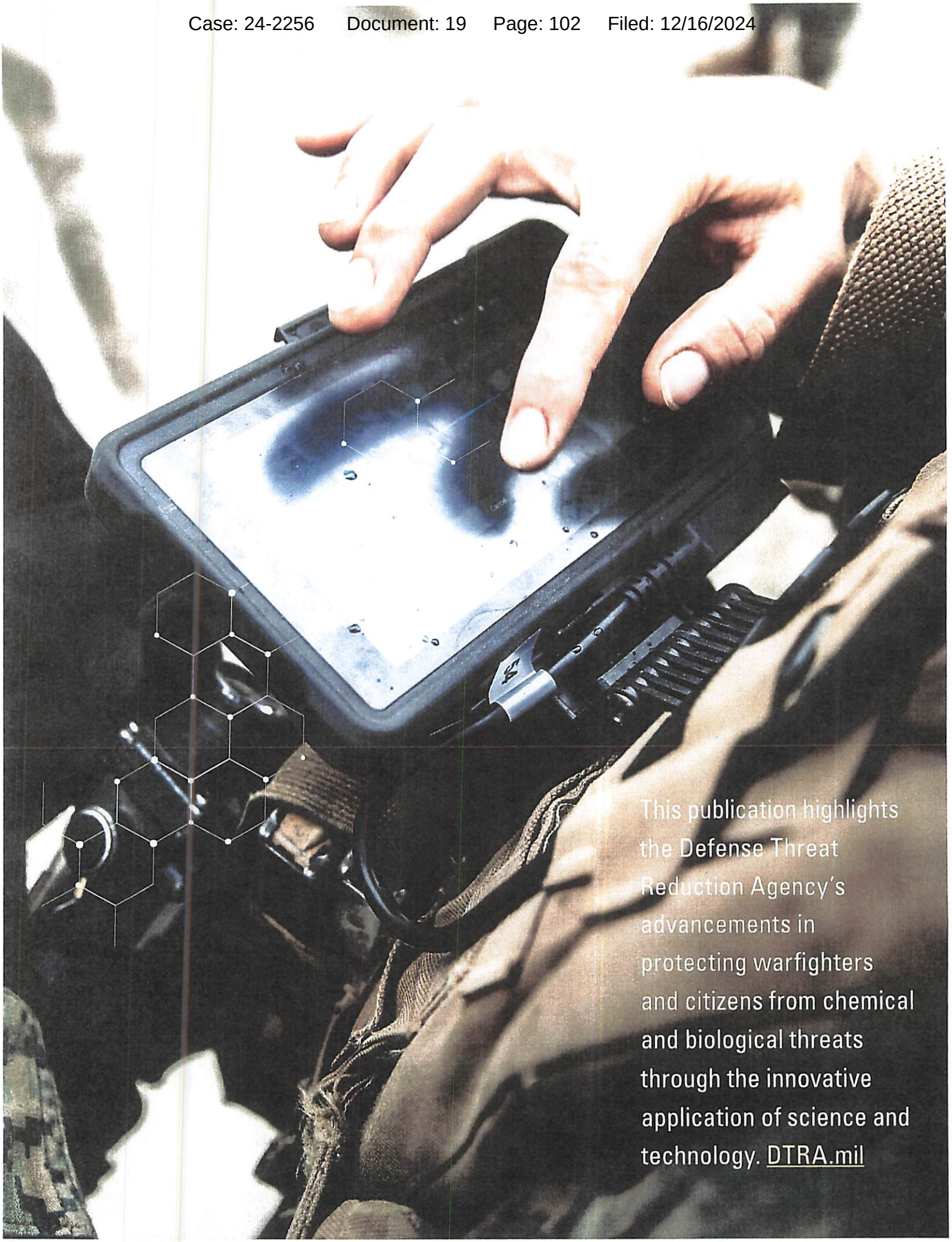
Figure 4. ATAK enables users to visualize the output of the CBRN Effects plug-in, which characterizes the dispersal and spread of chemical and biological warfare agents, superimposed on the dynamic locations of CBRN assets. Photo courtesy of DTRA.

Figure 5. Prototype CBRN Effects plug-in. Photo courtesy of DTRA.

Warfighters positively evaluated the Filter Times and other CBRN plug-ins at the 2019 Chemical and Biological Operational Analysis (CBOA) event, where warfighters evaluated several technology prototypes for their utility in chemical and biological defense. Warfighters reported that the CBRN capabilities in ATAK are useful and easy to use with minimal training.

Overall, the U.S. armed forces and their interagency and coalition partners value ATAK and the common operating picture it provides. DTRA continues to develop CBRN-specific plug-in capabilities to support warfighters on the battlefield. ●

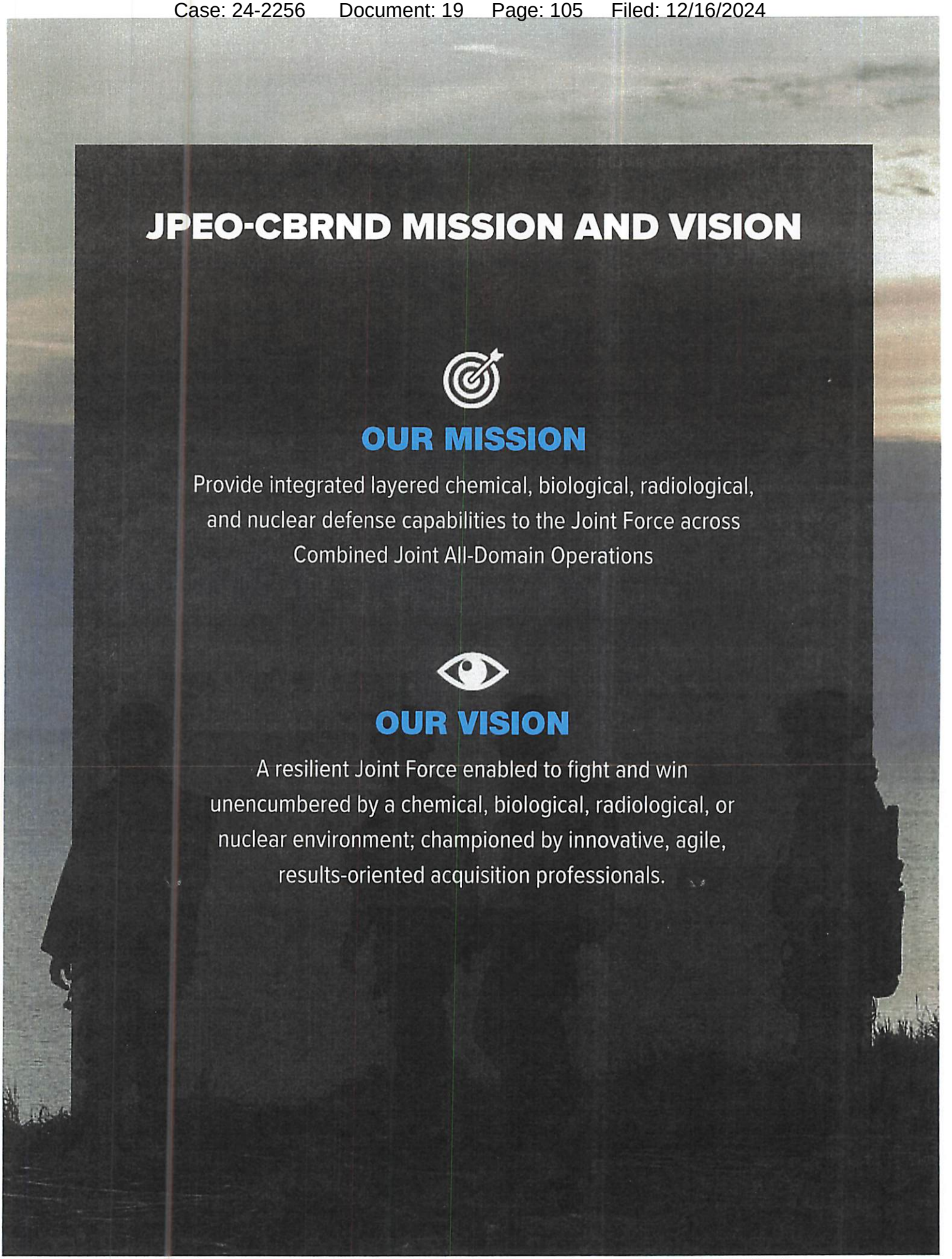
POC: Christopher Kiley, Ph.D; christopher.m.kiley.civ@mail.mil


This publication highlights the Defense Threat Reduction Agency's advancements in protecting warfighters and citizens from chemical and biological threats through the innovative application of science and technology. DTRA.mil

Appendix IV

JPEO-CBRND CAPABILITIES CATALOG 2024

JOINT PROGRAM EXECUTIVE OFFICE FOR CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR DEFENSE



JPEO-CBRND MISSION AND VISION

OUR MISSION

Provide integrated layered chemical, biological, radiological, and nuclear defense capabilities to the Joint Force across Combined Joint All-Domain Operations

OUR VISION

A resilient Joint Force enabled to fight and win unencumbered by a chemical, biological, radiological, or nuclear environment; championed by innovative, agile, results-oriented acquisition professionals.

JOINT PROJECT MANAGER (JPM) AND JOINT PROJECT LEAD (JPL) DESCRIPTIONS

JPM CBRN PROTECTION

JPM CBRN Protection develops, fields and sustains CBRN protection and mitigation capabilities for the warfighter and the Nation. They develop next-generation physical protection capabilities, like masks and suits, that reduce physiological burden and enhance protection against emerging threats. JPM CBRN Protection also develops contamination mitigation technologies, including decontamination systems, to significantly decrease the time and materials required to decontaminate personnel and equipment.

JPM CBRN MEDICAL

JPM CBRN Medical facilitates the advanced development and acquisition of medical solutions, such as nerve agent antidotes and diagnostic systems, to combat CBRN and emerging threats. They deliver safe, effective, and affordable medical solutions to counter threats and enable the Joint Force to fight and win in any denied environment. JPM CBRN Medical products span the continuum of medical care, providing an integrated layered medical defense, to include prevention, diagnosis, and treatment.

JPM CBRN SENSORS

JPM CBRN Sensors develops, fields and sustains CBRN sensors, reconnaissance systems, and mobile laboratory capabilities. They provide integrated early warning by bringing together the products in their portfolio along with robotics and autonomous systems, decision support tools, machine learning and artificial intelligence to provide situational awareness and understanding of CBRN threats.

JPM CBRN SPECIAL OPERATIONS FORCES

JPM CBRN SOF rapidly acquires and equips Special Operations and Special Purpose Forces with critical CBRN defense equipment necessary for mission success. Their focus is to further develop crucial technologies necessary for survival and unimpeded operations in denied CBRN environments. These technologies are transitioned to other Programs of Record as appropriate to enhance the capability of the Joint Force.

JPL CBRN INTEGRATION

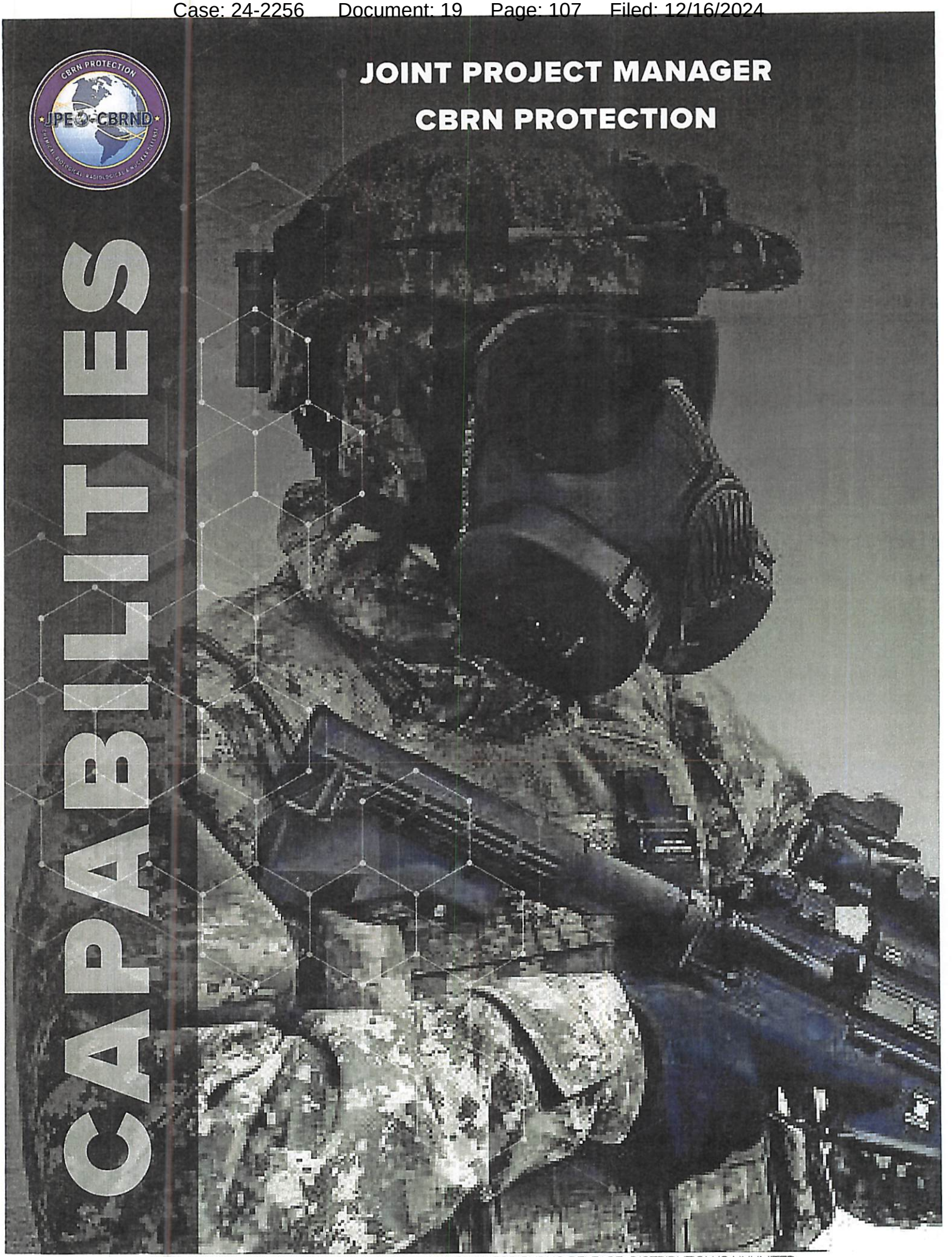
JPL CBRN Integration is responsible for the total lifecycle of enterprise information technology systems and provides enterprise-wise CBRN threat warning and reporting, hazard prediction, and decision support capabilities for the collection, analysis, and dissemination of CBRN defense information. These capabilities provide commanders with more complete situational understanding of all the threats in the battlespace by integrating CBRN defense systems with traditional defense systems.

JPL CBRND ENABLING BIOTECHNOLOGIES

JPL CBRND Enabling Biotechnologies enables the rapid development, manufacture, and fielding of safe and effective medical solutions across the full product spectrum, including development, clinical trials, manufacturing, and validated biological threat detection materials. These solutions support programs across the JPEO-CBRND portfolio by lowering product development risks and accelerating product maturity.

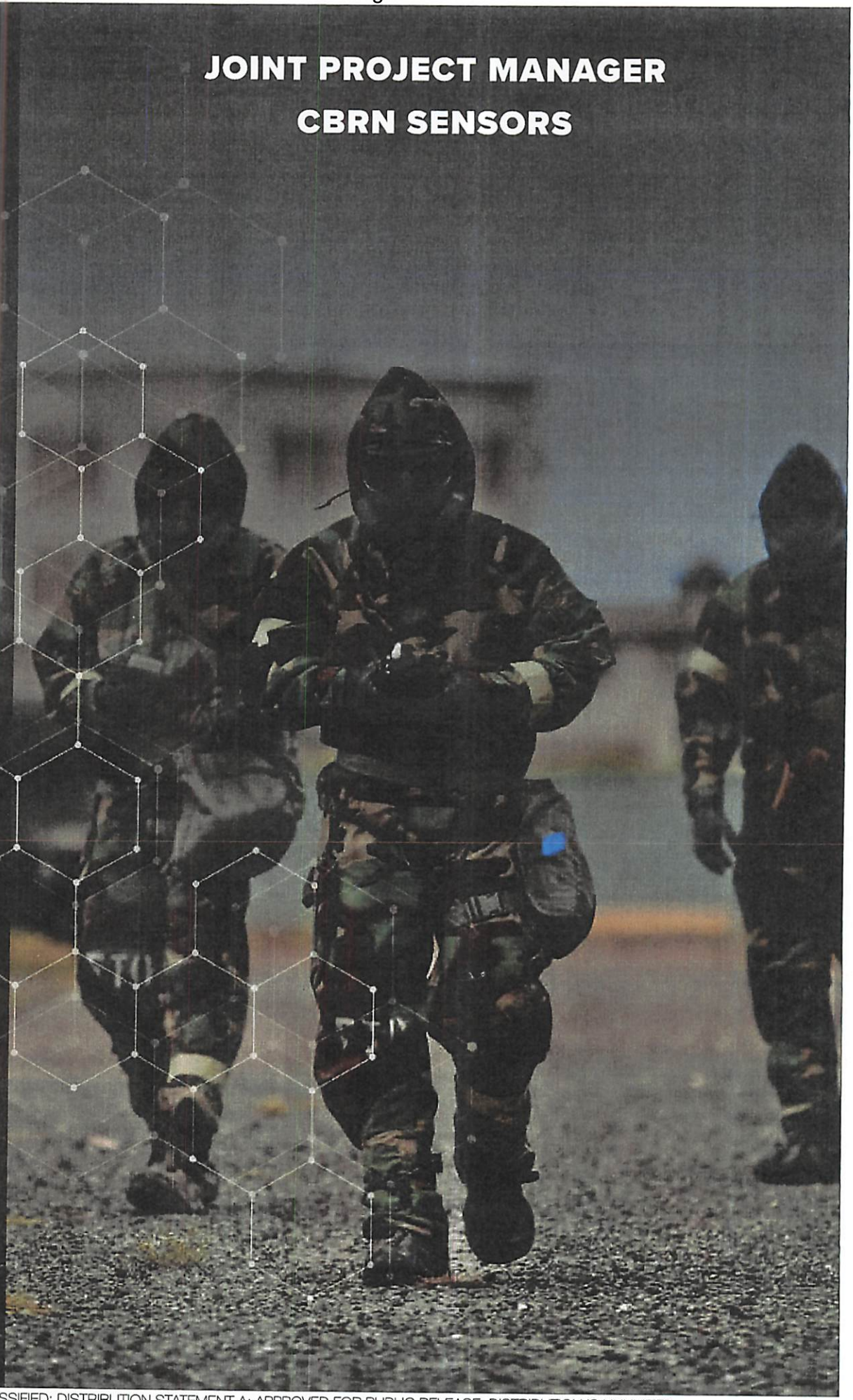
JOINT PROJECT MANAGER CBRN PROTECTION

CAPABILITIES



JOINT PROJECT MANAGER CBRN SENSORS

CAPABILITIES



JPM CBRN SENSORS

Aerosol Vapor Chemical Agent Detector (AVCAD)

Description: Aerosol Vapor Chemical Agent Detector (AVCAD) is filling critical gaps in current Joint Force chemical sensor capabilities, in the areas of liquid, solid and dusty aerosol Chemical Warfare Agent detection, and detection of specific advanced threats/Non-Traditional Agents.

Benefits to Warfighter: AVCAD provides a man-portable, sensitive aerosol and vapor chemical detection capability.

Contractor(s):
- Smiths Detection Inc. (Prime)

Program Status:
- FY14: Milestone A
- FY18: Milestone B
- FY23: Milestone C

Projected Activities:
- FY27: Initial Operational Capability
- FY32: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

Analytical Laboratory System Modification (ALS MOD)

Description: Analytical Laboratory System Modification (ALS MOD) addresses critical analytical equipment obsolescence and system functionality for NGB WMD-CSTs. It is modular, scalable, and adaptable to various environmental conditions and supports the specific mission of CONOPS.

Benefits to Warfighter: The ALS MWO addresses ALS Increment 1 obsolescence issues and will optimize the Warfighter's ability to analyze data by providing enhanced human factors and engineering controls, a larger shelter and work space, upgraded software, larger databases to help identify unknowns, and improved process flow integration.

Program Status:
- FY23: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Operations & Support (O&S)

JPM CBRN SENSORS

Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS)

Description: CBRN Dismounted Reconnaissance System (CBRN DRS) provides CBRN and EOD Warfighters with a comprehensive suite of detection/identification, protection, sample collection, hazard marking, decontamination, and support capabilities during dismounted reconnaissance, sensitive site assessment and render safe missions.

Benefits to Warfighter: CBRN DR SKO provides a comprehensive, all-hazards dismounted reconnaissance and site assessment capability to protect against, detect, and decontaminate chemical warfare agents, biological warfare agents, toxic industrial chemicals, and other hazards. SMPs will provide enhanced detection, protection, and situational awareness.

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT II

Acquisition Phase:
Production & Deployment (P&D)

Contractor(s):
- FLIR DETECTION, INC. (Prime)
- L2 Defense, Inc.

Program Status:
- FY11: Milestone B
- FY13: Milestone C
- FY22: Full Operational Capability

Projected Activities:
- FY24: Full Operational Capability

Chemical Indicator (CIND)

Description: The Colorimetric Indicator (C-IND) provides low-burden, higher confidence liquid, solid and vapor hazard detection capabilities for traditional and emerging chemical hazards.

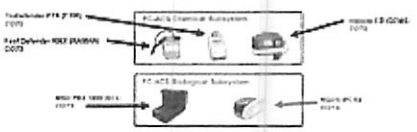
Projected Activities:
- FY25: Milestone A
- FY27: Milestone B

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT IV

Acquisition Phase:
Pre-Materiel Solution Analysis (Pre-MSA)

JPM CBRN SENSORS



Common Analytical Laboratory System Field Confirmatory Analytical Capability Set (CALS FC ACS)

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

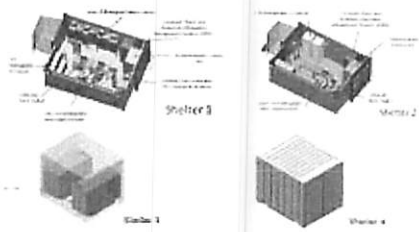
Acquisition Phase:
Production & Deployment (P&D)

Description: Common Analytical Laboratory System Field Confirmatory Analytical Capability Set (CALS FC ACS) is a common suite of CB COTS/GOTS to support DoD field analytic units. FC ACS results will assist and/or support Commanders or local authority decisions on protection, treatment, decontamination and planning of future operations.

Benefits to Warfighter: Information produced by FC ACS will assist commanders or the local authority with managing and mitigating the effects of a CBR attack or disaster by providing the ability to rapidly develop a common operating picture to determine the appropriate course of action.

Program Status:
- FY17: Milestone C

Projected Activities:
- FY26: Initial Operational Capability
- FY27: Full Operational Capability



Common Analytical Laboratory System Theater Validation Integrated System (CALS TV IS)

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

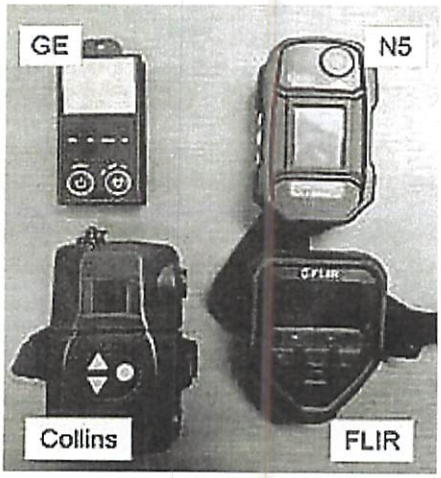
Description: Common Analytical Laboratory System Theater Validation Integrated System (CALS TV IS) integrates a common suite of CB COTS/GOTS to provide a common, modular, and transportable/mobile system to support USA AML and CARA Units and provide a high level of confidence in results via orthogonal technologies and expanded suite.

Benefits to Warfighter: The CALS TVIS will optimize the Warfighter's ability to analyze environmental samples by providing a mobile laboratory capable of providing Theater Validation results against Chemical and Biological threats. The system includes two large shelters, which gives the user ample space to perform sample manipulation under engineering controls in order to help identify unknown and prand feasibility of meeting validated samples for CALS analysis.

FY24: Reassess technology maturity requirement

Program Status:
- FY20: Milestone C

JPM CBRN SENSORS



Compact Vapor Chemical Agent Detector (CVCAD)

Description: Compact Vapor Chemical Agent Detector (CVCAD) is a man-worn, mounted, or unmanned robotic capability for the detection of chemical hazards.

Benefits to Warfighter: CVCAD alerts Warfighters to the presence of chemical vapor hazards and is applicable to man-worn and unmanned applications.

Contractor(s):
- Collins Aerospace
- FLIR DETECTION, INC.
- General Electric
- N5 Sensors, Inc

Program Status:
- FY14: Milestone A

Projected Activities:
- FY24: Milestone B

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Technology Maturation & Risk Reduction (TMRR)

Enhanced Maritime Biological Detection (EMBD)

Description: EMBD is a technology refresh to the JBPDS for the USN. It will provide an automated biological point detection capability to detect, collect & identify biological warfare agents and improved detection capability while increasing reliability and maintainability and lowering support costs over JBPDS.

Benefits to Warfighter: Enhanced Maritime Biological Detection (EMBD) is a next generation biological detection capability being fielded to the US Navy. EMBD increases the probability of detection of BWAs, reduces false alarms, reduces hardware failure rates and increases system reliability, availability and maintainability. EMBD's improved detection sensitivity and background discrimination provides the Navy the ability to "detect to inform" which will reduce the number of contaminated ships and minimize casualties.

Contractor(s):
- Chemring Sensors and Electronic Systems, Inc. (Prime)

Program Status:
- FY18: Milestone B
- FY20: Milestone C
- FY23: Initial Operational Capability

Projected Activities:
- FY28: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

JPM CBRN SENSORS

Joint Biological Tactical Detection System (JBTDS)

Description: Joint Biological Tactical Detection System (JBTDS) provides the Joint Warfighter detection, collection, and identification capability of Biological Warfare Agent (BWA) aerosols to enhance battle space awareness, protect and preserve the forces, and support time sensitive force protection decisions.

Benefits to Warfighter: The JBTDS' ability to detect, collect, and identify biological warfare agents at very low concentrations gives Warfighters additional time to make decisions and take action to prevent or reduce the risk of exposure. Gold-standard molecular technology provides field confirmatory bioagent identification, enabling Commanders to rapidly support battlespace decisions.

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT II

Acquisition Phase:
Production & Deployment (P&D)

Contractor(s):
- CHEMRING SENSORS AND ELECTRONIC SYSTEMS, INC. (Prime)
- MRIGLOBAL (Prime)
- BIOMEME, INC.

Program Status:
- FY11: Milestone A
- FY14: Milestone B
- FY23: Milestone C

Projected Activities:
- FY29: Initial Operational Capability
- FY32: Full Operational Capability

Joint Personal Dosimeter-Individual (JPD-I)

Description: The Joint Personal Dosimeter-Individual (JPD-I) is intended to replace DoDs legacy dosimeters (the Navys IM-270 and the Armys PDR-75 Series Systems). The JPD will provide a sensor to record and retrieve a Service members radiation exposure from occupational to tactical levels.

Benefits to Warfighter: JPD-I will support radiological defense missions, which include detecting and tracking the accumulated total dose an individual receives from ionizing radiation and recorded in the individuals' medical records. JPD-I provides near real time indication of total absorbed dose to the individual without the need to use a separate reader. Capable to achieve National Voluntary Laboratory Accreditation Program (NVLAP) to obtain Dose of Record for Warfighter's Medical Records.

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

Contractor(s):
- Mirion Technologies, Inc (Prime)

Program Status:
- FY17: Milestone C
- FY23: Initial Operational Capability

Projected Activities:
- FY32: Full Operational Capability

JPM CBRN SENSORS

Man-portable Radiological Detection System (MRDS)

Description: Man-portable Radiological Detection System (MRDS) increases capabilities to detect, localize, presumptively identify, and field-confirm the presence of Special Nuclear Material. It is networked to provide near real-time, tactical level situational awareness during CWMD Interdiction and Elimination operations.

Benefits to Warfighter: MRDS increases the Warfighter's awareness of radiological threats at the tactical level.

Contractor(s):

- Advanced Measurement Technology, Inc. (Prime)
- Bruker Detection Corp. (Prime)
- Leidos (Prime)
- Interfuze (Prime)

Program Status:

- FY18: Milestone C
- FY23: Full Rate Production

Projected Activities:

- FY24: Initial Operational Capability
- FY31: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

Non-targeted Sequencing Identification System (NSIS)

Description: Non-Targeted Sequencing Identification System (NSIS) will provide the National Guard with a Metagenomic Sequencing capability within their WMD-CST formations.

Projected Activities:

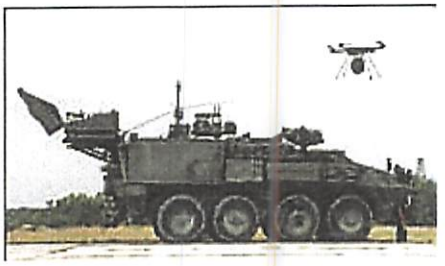
- FY25: Milestone B
- FY27: Initial Operational Capability
- FY28: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT IV

Acquisition Phase:
Pre-Materiel Solution Analysis (Pre-MSA)

JPM CBRN SENSORS



Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU)

Description: NBC Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU) provides maneuver formations the ability to conduct mounted reconnaissance and surveillance missions of CBRN named areas of interest (NAIs).

Contractor(s):

- ADVANCED TECHNOLOGY INTERNATIONAL (Prime)
- L2 Defense, Inc.
- MRIGLOBAL

Projected Activities:

- FY28: Initial Operational Capability
- FY42: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT II

Acquisition Phase:
Engineering & Manufacturing Development (EMD)

Radio Isotope Identification Detector (RIID)

Description: Radio Isotope Identification Detector (RIID) is a Family of handheld, ruggedized, and networked RIIDs that use different COTS technologies to locate, identify, and characterize radiological and nuclear (RN) material, including special nuclear materials.

Contractor(s):

- SYMETRICA INC. (Prime)

Program Status:

- FY19: Milestone A
- FY22: Initial Operational Capability
- FY22: Milestone C

Projected Activities:

- FY27: Full Operational Capability

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

JPM CBRN SENSORS

Radiological Detection System (RDS)

Description: Radiological Detection System (RDS) provides a standard DoD RDS that will replace the current radiation detection, indication, and computation (RADIAC) systems (AN/PDR-77, AN/VDR-2, ADM-300, and MFR Suite) used by the Joint Services and consolidate the capabilities into one joint solution.

Benefits to Warfighter: The RDS will provide Warfighters with an understanding of their total exposure to various types of radiation.

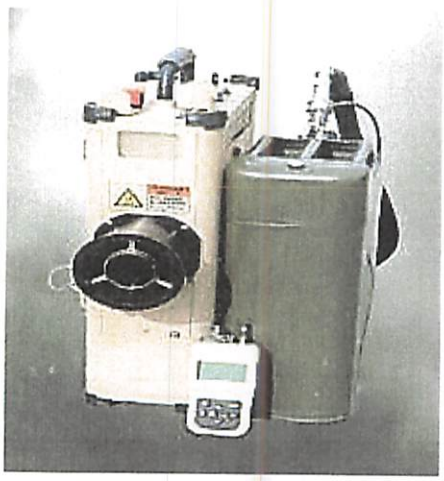
Contractor(s):
- Visionary Products Inc. (Prime)

Program Status:
- FY14: Milestone A
- FY23: Milestone C

AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)



Screening Obscuration Module (SOM)

Description: Screening Obscuration Module (SOM) is a modular medium-area and duration screening obscuration capability that is located at the small element level of conventional force units and is employed at the tactical in a mounted or dismounted configuration.

Benefits to Warfighter: -Increases Soldier and Platform Survivability.
-Degrades the enemy's ability to detect US targets.
-Supports Mounted and Dismounted units

Contractor(s):
- L3HARRIS TECHNOLOGIES, INC. (Prime)

Program Status:
- FY06: Milestone A
- FY22: Milestone C

Projected Activities:
- FY24: Full Operational Capability
- FY24: Initial Operational Capability

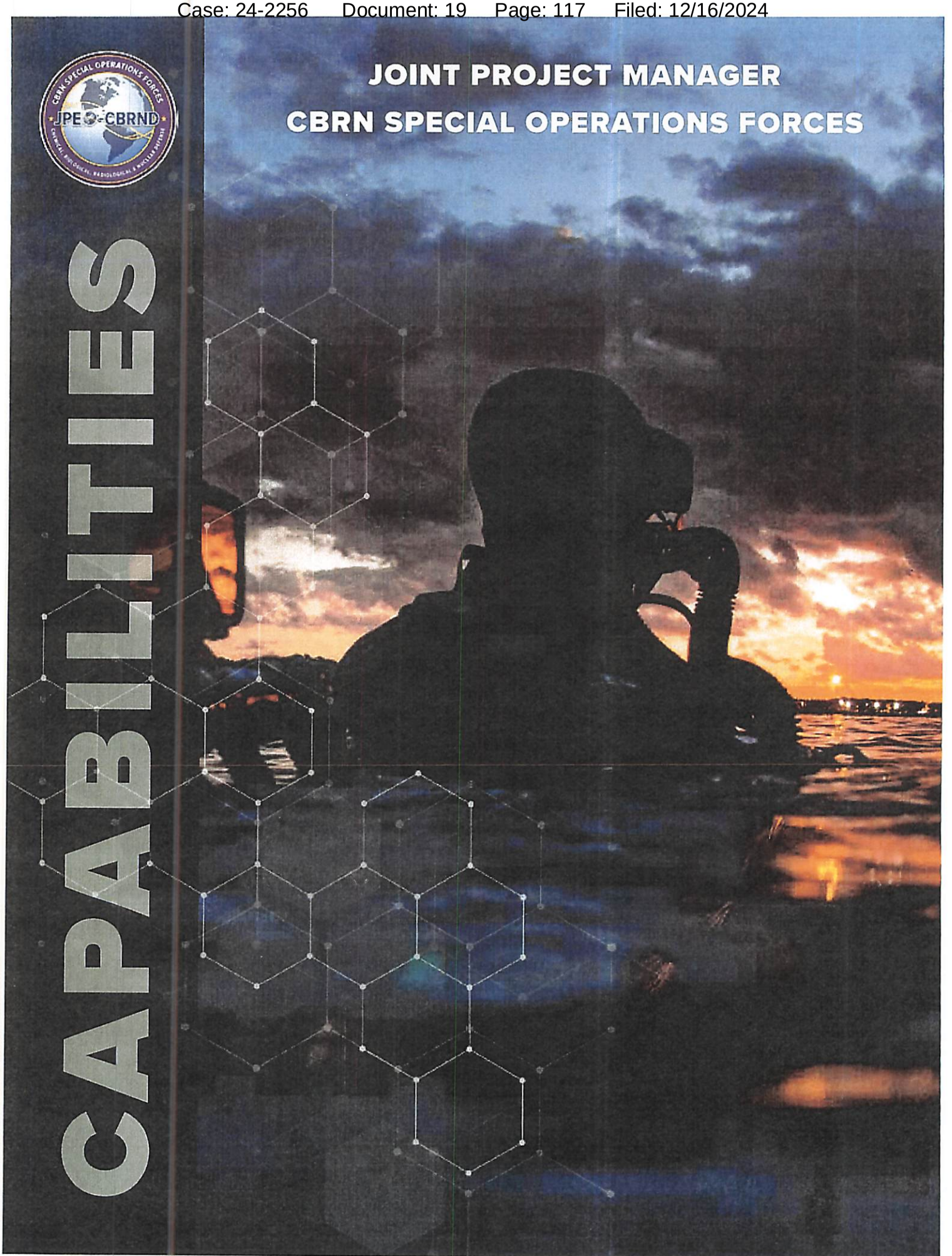
AAF Pathway:
Major Capability Acquisition (MCA)

Acquisition Category:
ACAT III

Acquisition Phase:
Production & Deployment (P&D)

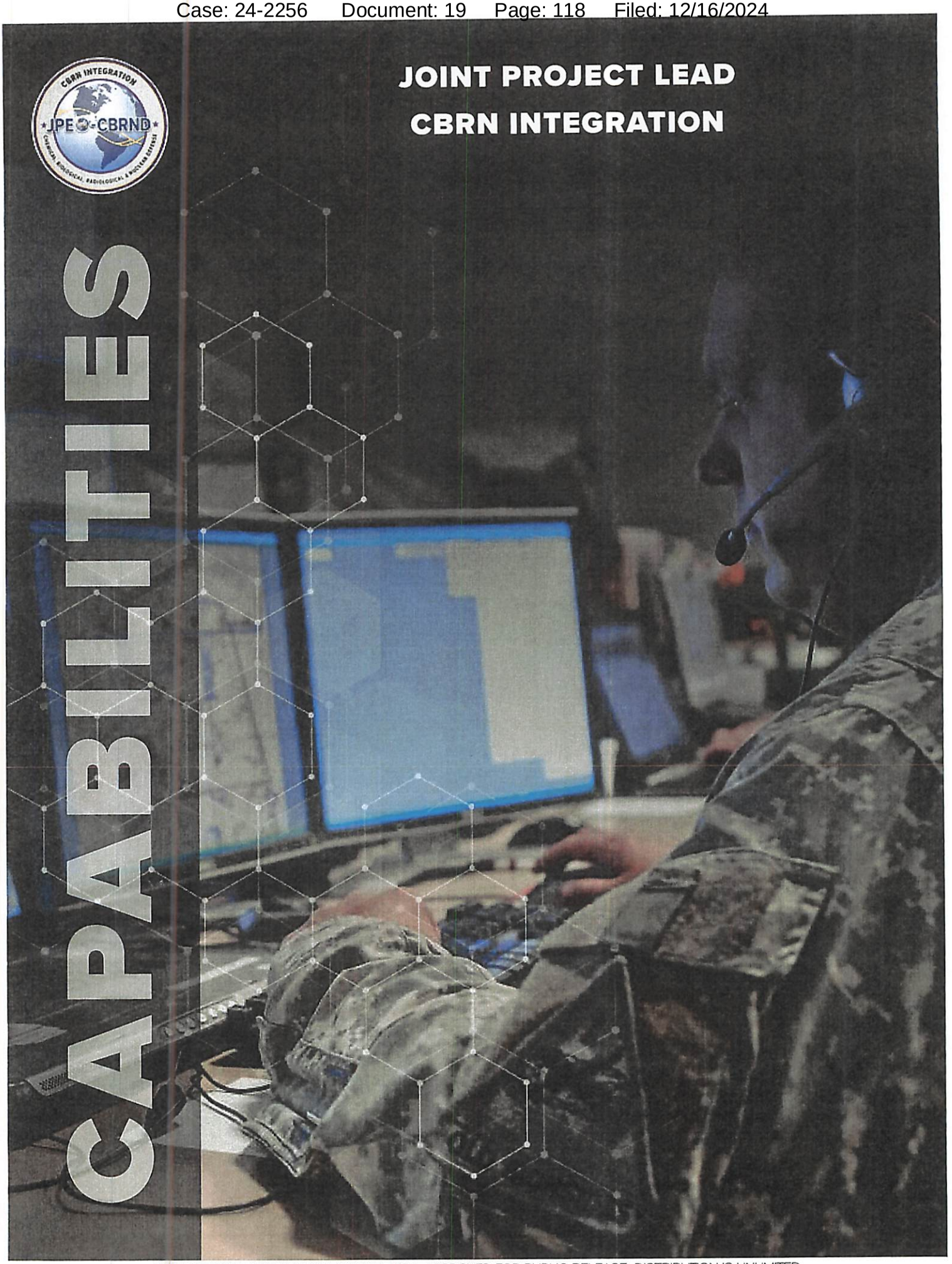
JOINT PROJECT MANAGER
CBRN SPECIAL OPERATIONS FORCES

CAPABILITIES



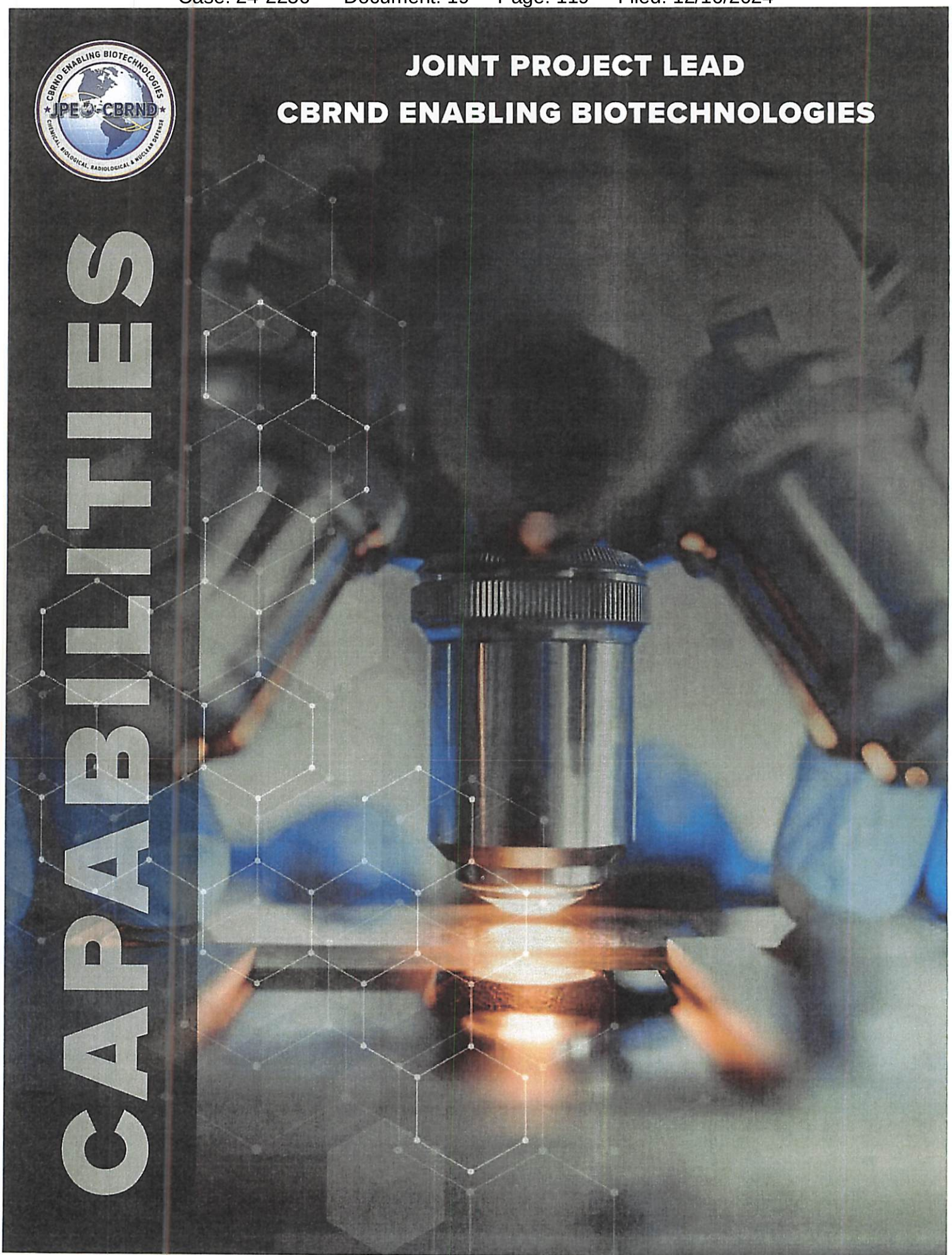
JOINT PROJECT LEAD
CBRN INTEGRATION

CAPABILITIES



JOINT PROJECT LEAD
CBRND ENABLING BIOTECHNOLOGIES

CAPABILITIES



ACRONYM	DEFINITION
AA-ENBD	Accelerated Antibodies - Enhanced Biological Defense
AAF	Adaptive Acquisition Framework
AAL	Additional Authorized List
AAS	Advanced Anticonvulsant System
ACAA	Automatic Chemical Agent Alarm
ACADA	Automatic Chemical Agent Detector Alarm
ADD	Advanced Differential Diagnostics
ADS	Autonomous Decontamination System
ALS	Analytical Laboratory System
ALS MOD	Analytical Laboratory System Modification
APR	Air Purifying Respirator
ASPIRE	Advanced System for Protection and Integrated Reduction of Encumbrances
ASPIRE-ENBD	Advanced System for Protection and Integration Reduction of Encumbrances - Enhanced Biological Defense
AV TX	Antiviral Therapeutics
AVCAD	Aerosol Vapor Chemical Agent Detector
AVO TX	Antiviral Oral Therapeutics Program
BCIS-ENBD	Biological Containment Isolation System - Enhanced Biological Defense
BIDS	Biological Integrated Detection System
BOT MAB	Botulinum Monoclonal Antibodies
BOT TX	Botulinum Toxin Therapeutic
BWA	Biological Warfare Agent
CALS FC ACS	Common Analytical Laboratory System Field Confirmatory Analytical Capability Set
CALS TV IS	Common Analytical Laboratory System Theater Validation Integrated System
CANA	Convulsive Antidote for Nerve Agents
CASB	Chemical Biological Aircraft Survivability Barrier
CB	Chemical Biological
CB-AAM	Chemical-Biological Apache Aviator Mask
CB COTS/GOTS	Chemical Biological Commercial Off-The-Shelf/Government Off-The-Shelf
CBM	Chemical-Biological Mask System
CBDP	Chemical and Biological Defense Program
CBIPR ADM	Chemical Biological Incident Preparedness and Response Advanced Design Manufacturing
CBPS	Chemical and Biological Protective Shelter
CBRN	Chemical, Biological, Radiological and Nuclear
CBRND	Chemical, Biological, Radiological and Nuclear Defense
CBRN DRS	Chemical, Biological, Radiological Nuclear Dismounted Reconnaissance Systems
CEDS	Critical Equipment Decontamination System
CHRS	Contaminated Human Remains System
CIND	Chemical Indicator
COVID VAC	Validated Nucleic Acid Vaccine Construction
CP DEPMEDS	Chemically Protected Deployable Medical System
CPFH	Collectively Protected Field Hospital
CPG	Clinical Practice Guideline

ACRONYM	DEFINITION
CRESS	Chemical Reconnaissance and Explosives Screening Set
CSC2	Chemical Biological Radiological Nuclear Support to Command & Control
CVCAD	Compact Vapor Chemical Agent Detector
CWMD	Countering Weapons of Mass Destruction
DBPAP	Defense Biological Product Assurance Program
DFoS GPD	Decontamination Family of Systems General Purpose Decontaminant
DFoS JSEW	Decontamination Family of Systems Joint Service Equipment Wipe
DFU	Dry Filter Unit
EMBD	Enhanced Maritime Biological Detection
EMD	Engineering & Manufacturing Development
EOD	Explosive Ordnance Disposal
FAMS-S-RP	Forward Area Mobility Spray System - Rapid Prototyping
FDA	Food and Drug Administration
FGA	Fourth Generation Agents
GUIDE-ENBD	Generative Unconstrained Intelligent Drug Engineering - Enhanced Biological Defense
HED	Human Effective Dose
ICAM	Improved Chemical Agent Monitor
JACKS DBS	Joint Acquisition Chemical Biological Knowledge System Defense Business System
JBADS	Joint Biological Agent Decontamination System
JBPDS	Joint Biological Point Detection System
JBTDS	Joint Biological Tactical Detection System
JC3	Joint Service Chem/Bio Coverall for Combat Vehicle Crewmen
JCAD	Joint Chemical Agent Detector
JCAD SLA	Joint Chemical Agent Detector Solid Liquid Adapter
JCBRAWM	Joint Chemical Biological Radiological Agent Water Monitor
JECP	Joint Expeditionary Collective Protection
JEM	Joint Effects Model
JHBI	Joint Handheld Bio-Agent Identifier
JPACE	Joint Protective Aircrew Ensemble
JPD-I	Joint Personal Dosimeter-Individual
JPEO-CBRND	Joint Program Executive Officer for Chemical, Biological, Radiological and Nuclear Defense
JPL	Joint Project Lead
JPM	Joint Project Manager
JSAM Apache	Joint Service Aircrew Mask Apache
JSAM RW	Joint Service Aircrew Mask Rotary Wing
JSAM SA	Joint Service Aircrew Mask Strategic Aircraft
JSAM TA	Joint Service Aircrew Mask Tactical Aircraft
JSCESM	Joint Service Chemical Environmental Survivability Mask
JSEW	Joint Service Equipment Wipe
JSGPM	Joint Service General Purpose Mask
JSGPM M53A1	Joint Service General Purpose Mask M53A1
JSLIST	Joint Service Lightweight Integrated Suit Technology

ACRONYM	DEFINITION
JSLIST AFS	Joint Service Lightweight Integrated Suit Technology - Alternative Footwear Solutions
JSLIST IFS	Joint Service Lightweight Integrated Suit Technology Integrated Footwear System
JSLIST JB1GU FR	Joint Service Lightweight Integrated Suit Technology Block 1 Glove Upgrade Flame Resistant
JSLIST JB1GU nFR	Joint Service Lightweight Integrated Suit Technology Block 1 Glove Upgrade Non-Flame Resistant
JSTDS SS	Joint Service Transportable Decon System Small Scale
JWARN	Joint Warning and Reporting Network
LVOSS	Light Vehicle Obscuration Smoke System
mAb	Monoclonal Antibody
MCA	Major Capability Acquisition
MCM	Medical Countermeasure
MCM MFRO	Medical Countermeasures Manufacturing Optimization
MCMPT	Medical Countermeasure Platform Technologies
MFK	Mobile Field Kit
MOD MED	Modernization Medical
MOPP	Mission Oriented Protective Posture
MPD	Mass Personnel Decontamination
MRDS	Man-Portable Radiological Detection System
MSA	Materiel Solution Analysis
MTA	Middle Tier of Acquisition
NA	Nerve Agent
NAIs	Named Areas of Interest
NBCRV SSU	Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade
NGB	National Guard Bureau
NGB WMD-CSTs	National Guard Bureau Weapons of Mass Destruction Civil Support Team
NGDS	Next Generation Diagnostic System
NGDS 2 ChemDX	Next Generation Diagnostics System 2 Chemical Diagnostics
NGDS 2 MPDS	Next Generation Diagnostics System 2-Man Portable Diagnostic System
NIOSH	National Institute for Occupational Safety and Health
NON MED PPE	Non Medical Personal Protective Equipment
NSIS	Non-Targeted Sequencing Identification System
NTA	Non-Traditional Agent
NVLAP	National Voluntary Laboratory Accreditation Program
O&S	Operations & Support
P&D	Production & Deployment
PAPR	Powered Air Purifying Respirator
PATS	Protective Assessment Test System
PBA	Pharmaceutical Based Agent
PCR	Polymerase Chain Reaction
PLG MAB	Plague Monoclonal Antibodies
POM	Program Objective Memorandum
POR	Programs of Record
PPE	Personal Protective Equipment

ACRONYM	DEFINITION
PPTS-ENBD	Portable Patient Transport System - Enhanced Biological Defense
RADIAC	Radiation Detection, Indication and Computation
RAPID	Rapid Access to Products in Development
RDS	Radiological Detection System
RIID	Radio Isotope Identification Detector
RN	Radiological and Nuclear
RNATS	Reactivating Nerve Agent Treatment System
ROCS	Rapid Opioid Countermeasure System
RSDL	Reactive Skin Decontamination Lotion
S&T	Science & Technology
SCBA	Self Contained Breathing Apparatus
SEDS	Service Equipment Decontamination System
SIS	Shipboard Isolation System
SLA	Solid Liquid Adapter
SMP	Series Mask Program
sNDA	Supplemental New Drug Application
SOD-Vr	Screening Obscuration Devices - Visual Restricted Terrain
SOF	Special Operations Forces
SOM	Screening Obscuration Module
SPCHAR-ENBD	Surveillance and Pathogen Characterization - Enhanced Biological Defense
SPU RCDD	Special Purpose Unit Rapid Capability Development and Deployment
SPX AV PEP	Smallpox Antiviral Post-Exposure Prophylaxis
TATPE	Tactical Advanced Threat Protective Ensemble
TCMS	Tactical Contamination Mitigation System
TMRR	Technology Maturation & Risk Reduction
UCS	Unified Command Suite
UI	User Interface
UIPE	Uniform Integrated Protection Ensemble
UIPE FoS	Uniform Integrated Protection Ensemble Family of Systems
UIPE FoS Gloves - RP	Uniform Integrated Protection Ensemble Family of Systems Glovers - Rapid Prototyping
UIPE FoS GP	Uniform Integrated Protection Ensemble Family of Systems General Purpose
USA	U.S. Army
USAF	U.S. Air Force
USMC	U.S. Marine Corps
USN	U.S. Navy
USSOCOM	U.S. Special Operations Command
VAMP	Vaccine Acceleration by Modular Progression
VAMP-ENBD	Vaccine Acceleration by Modular Progression - Enhanced Biodefense
VSST	Vaccine Storage and Stability Testing
WMD-CST	Weapons of Mass Destruction Civil Support Team

Appendix V

"Proposal White Paper"

BROAD AGENCY ANNOUNCEMENT (BAA) 07-10

CELL-ALL Ubiquitous Biological and Chemical Sensing

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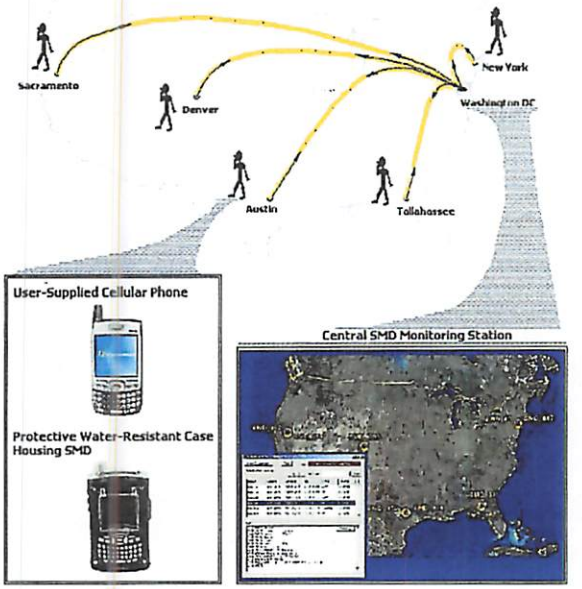
Authorized Officer: Larry Golden

BAA Number: CELL-ALL BAA07-10 **Title:** CELL-SMD; Multi Sensor-Detection	**Offeror Name:** ATPG TECHNOLOGY, LLC **Date:** 11/28/2007
	**Operational Capability:** 1. Ability to effectively sense/detect chemical agents, reliably and securely report position and detection readings. Provide software applications to easily manage large scale network. Design allows for straightforward integration with existing cell phones Ability to graphically depict and filter live data. 2. Goal: ability to detect chemical or biological agents 99%. Goal: network throughput 99%. 3. Prototype SMD(cell phone case) target cost is $50 in mass quantities (excluding sensor) Competition among sensor developers will drive final cost. 4. Durable, inexpensive device, does not degrade performance of host device Makes extensive use of existing technology and builds upon completed spiral of a similar device.
Proposed Technical Approach: 1. Provides Sensor Monitoring Device (SMD) in a protective cell phone case. Easy to distribute/integrate with cell phone Viewer/Management SW provides hierarchical levels for information flow 2. Incorporate selected sensors into existing SMD functional prototype Manufacture prototype cell phone cases to accommodate SMD and sensors Enhance/scale existing cell phone, web and desktop support applications 3. First spiral complete, yielded functional prototypes – SMD, web, desktop & cell phone applications 4. Established working relationships with Otter Box and ECBC 5. CELL-ALL technical approach & rational taken from, "Multi Sensor-Detection and Lock Disabling System", (Patent Pending; Pub., 10-18-07; App. #: 11/397,118:)	**Schedule, Cost, Deliverables, & Contact:** One year Period of Performance, $1,000,000 Prototype and manufacture cell phone cases with integrated SMD, chemical and biological sensors Enhance/scale viewer/management software to support large sensor network **Deliverables:** Prototyped cell phone case containing SMD and sensors Cell phone & desktop viewer/management SW System demonstration of: sensor detection, alert transmitted through hierarchy and control center messages to SMD **Corporate Information:** ATPG TECHNOLOGY, LLC Larry Golden, CEO 522 Peach Grove Place Mauldin, SC 29662 Phone: 864-288-5605 lgolden5605@charter.net

Executive Summary:

Two years ago, recognizing the danger that existed if a WMD was concealed, transported and deployed within our borders, ATPG embarked on the development of a multi-sensor, tracking and detection system. The first development spiral yielded a functional Sensor Monitoring Device (SMD) prototype and tiered communication applications to distribute, monitor and manage the multi-sensor SMD network information. The ubiquitous sensor network solution proposed in this white paper borrows heavily from the technology developed in spiral one. The tiered communication, viewer and management software applications were designed to be part of a large sensor network. For this application the software will be scaled and enhanced to accommodate the volume of traffic that would result from an extremely large sensor network. Our SMD was designed to provide as much flexibility as possible and communicates with a variety of sensors through an array of built-in standard interfaces (SPI, A/D, Serial, Bluetooth, I2C etc). This existing open architecture design affords us the opportunity to collaborate with the U.S. Army Edgewood Chemical and Biological Center (ECBC) to evaluate, test and acquire the most appropriate miniaturized chemical and biological sensors.

ATPG intends to utilize the hardware and software technology developed in spiral one as the basis for the ubiquitous sensor network. The form factor of the SMD will be re-engineered so that it can initially be housed in cell phone cases allowing straightforward integration with existing cell phones. The SMD, housed in the cell phone cases will use a Bluetooth channel to communicate with ATPG software hosted on the cell phone. This software will provide bidirectional communication between the SMD and cell phone. The cell phone software will additionally use email and SMS messaging services to communicate information to control centers. The software for managing the information from the sensor network will be architected in a way that provides a means to efficiently escalate information up the government hierarchy. The software will employ a large database back-end and where practical message routing rules will be implemented to allow for effective and efficient routing of sensor message traffic.

Utility to Department of Homeland Security:

ATPG's strategy of incorporating its existing SMD design into cell phone cases provides a means to quickly establish a massive sensor network nationwide. ATPG proposes modifying the SMD form factor so that it can be installed into the most common cell phone cases. When a person volunteers for the program they would receive a cell phone case along with an adapter cord that would connect to their existing phone charger; allowing the SMD and phone to charge simultaneously. A switch on the case will allow the volunteer to enable the device at their discretion. If a volunteer elects to participate in the program and their cell phone does not have an on-board GPS, the SMD provided in the cell phone case will be equipped with one. The geographic position of the SMD/cell phone pair will be determined either by GPS, cell phone tower database and signal strength or by a Wi-Fi hotspot database. In the event current position cannot be determined, the device will use its last known good position fix for communications

and the position will be flagged as such. Housing the SMD and sensors in a cell phone case provides a number of advantages. Since the SMD will draw all of its power from its own power source the only resources required from the cell phone will be for a dedicated Bluetooth channel and limited processing power to execute the cell phone software. Additionally, the consumables in the cell phone case (battery, sensors etc.) can easily be switched out, or the entire case can be easily replaced. ATPG will be working with the Otter Box Company to design a cell phone case capable of housing the SMD and its sensors, providing a protective, water-resistant case while maintaining complete cell phone interactivity. This approach will allow ATPG to easily and incrementally make changes to the host platform as the technology of the SMD and its sensors are miniaturized.

Technical Approach:

The creation, implementation and management of a massive sensor network will require a design approach that delivers a system solution. Every tier of the system is important and the end product must be manageable, provide redundancy and implement an open architecture wherever possible. The ATPG solution proposed here focuses on these requirements and delivers a design that translates into a straightforward, deployable sensor network system that can be distributed en masse.

At the lowest level, the SMD is engineered to communicate with a variety of sensors through an array of standard interfaces (SPI, A/D, Serial, I2C etc). This open architecture allows for easily integrating additional sensors into the device and expanding the range of hazardous agents detectable by the SMD. The SMD will continually monitor/control the attached sensors and communicate with the cell phone via a dedicated Bluetooth channel. When the SMD is activated by the user, a small software application installed on the phone will monitors the Bluetooth channel for detection alerts and also forward commands received from control centers to the SMD. The SMD will periodically send its position information to the control center. The position the SMD will report to the control centers is determined using a layered approach. Initially the SMD will look to the on-board GPS (if provided) to determine position. If the cell phone is equipped with a GPS the application on the cell phone will retrieve the position from its own GPS. When a GPS position cannot be determined, the position of the SMD and its user will be calculated based on a cell phone tower database, provided by the FCC and signal strength. If this does not yield a result, the Wi-Fi hotspot database will be utilized to determine SMD and user position. If all these options fail, the last known position can be augmented with the on board accelerometers to estimate the current position which will be reported to the control centers and annotated as a last position and a possible position. All information received by the cell phone application from the SMD will be forwarded to the control centers either through email or SMS messages if email is not available. The information transmitted will be encoded in XML and encrypted prior to transmission. When a user needs to be notified of information from a control center, the cell phone software will use either a ring tone or vibration to call the user's attention to the display. This solution of integrating the SMD into the cell phone case and installing a small software application on the volunteer's cell phone provides a means to easily

modify and upgrade the sensor network system as advancements are made to sensor and SMD technology with minimal impact to the user.

The web and desktop software that support the sensor network is designed to support an escalating reporting hierarchy. At each level rules can be established in the message routing software to facilitate the transfer of alert information. Rules can also be established to assist in determining the area affected by an alert. In the event a chemical or biological agent is detected and reported, the software can automatically search for other sensors in a pre-defined area and command them to sample and report back. This information can then be used by first responders and local government to determine the impacted area and aid in creating a plan of action to cope with the event. The reporting hierarchy can be configured as needed but the current configuration sends notification to the local First Responder units, followed by City, County, State and Federal government. As the information works its way up the hierarchy rules at each level fire off to create events that notify necessary personnel at each level. The viewer/management software used at each level of the hierarchy is identical. How the system forwards and responds to data is configured in the message routing rules table. The desktop software uses Google Earth as a viewer and plots the position of the sensors and detections on the map. Filtering options are provided in the software to allow the screen to be decluttered. A hierarchical database of sensors reporting to the viewers at a given control center is maintained to allow simple manipulation of the sensor network. The software will allow the user to drill down into lower levels of the data by clicking on the images on the map or through the windows explorer like interface provided. The software will also allow commands and alerts to be sent to SMD enabled cell phones by clicking on the image or on its text representation. Each SMD representation on the map will display its unique identification number as its label and clicking on the icon will display the last set of data received by the control center. The sensor network data can also be made available to smart phones and PDAs running a variation of the viewer/management software. All data passed through this network will be encrypted and all database and user accounts will be protected by multiple layers of security to ensure the privacy of the volunteers and protect their location from foreign/unwanted access.

As an option all messages sent from the SMD to the control centers could receive notification of receipt; confirmation that the network is operating properly. This could be a builtin fail safe, which would allow the user to be notified first if detection occurred and the information could not be transmitted to a control center. In this scenario the user would be notified of the detection and could take action to leave the area and contact authorities through some other means.

Personnel and Performer Qualifications and Experience:

Larry Golden is the CEO of ATPG and will be the project manager for this program. Mr.Golden's invention and patent pending sensor monitoring device (Pub. 10-18-07; App. #: 11/397,118) will be used as the departure point for the development of the SMD. Mr. Golden's background is in industrial engineering and management. Larry's duties will include managing the schedule, budget and subcontractors providing the cell phone cases.

Harold Kimball is a software engineer with twenty years' experience developing software applications, including embedded systems, operational flight programs, database applications, and web and desktop applications. Mr. Kimball will be the technical lead on this program as well as the lead software developer for the SMD applications. Over the past few years Mr. Kimball's focus has been on developing situational awareness applications, embedded device applications and aircraft simulation software. Mr. Kimball has a Bachelor's degree in Computer Science and is working on his Master's Degree in Artificial Life. Mr. Kimball recently had an article published describing a scalable disaster relief and communications infrastructure system he is developing to aid first responders and disaster relief personnel in their efforts.

Doug Cumbie is an electrical engineer and software engineer with six years' experience developing embedded systems, web applications, situational awareness software and aircraft simulation software. Mr. Cumbie will be the lead Engineer on this program as well as the primary developer for the web and desktop applications. Over the past few years Mr. Cumbie has focused on embedded device development, situational awareness applications and aircraft simulation software. Mr. Cumbie holds Bachelor's degrees in both Computer Engineering and Electrical Engineering.

The Otter Box Corporation will provide custom cell phone cases for housing the SMD developed by ATPG. The Otter Box Corporation has extensive experience manufacturing and distributing custom cases for cell phones, laptops and PDAs. Their manufacturing and distribution experience will play a key role in the ability to efficiently develop, manufacture and distribute a custom cell phone case enveloping the SMD and providing a water resistant and protective case.

U.S. Army Edgewood Chemical and Biological Center (ECBC) will play a vital role in assisting ATPG with evaluating, testing and selecting the most appropriate miniaturized chemical and biological sensors available. ATPG and ECBC have a collaborative agreement in place ensuring ATPG of their services in sensor analysis and selection.

Commercialization and Capabilities:

ATPG will work closely with Otter Box and ECBC to determine the physical characteristics and requirements needed to create a custom cell phone enclosure for the selected sensors and SMD. ATPG will leverage Otter Box's manufacturing and distribution experience to enable ATPG to produce and deliver large quantities of custom cell phone cases. As mentioned previously the case will be designed and developed so that consumables can easily be swapped out or the entire cell phone case can be replaced. This approach ATPG is pursuing is the most economical and efficient way to mass distribute a sensor network; providing low risk and minimal impact to volunteers of the program. Becoming part of this volunteer network would be a simple process and would only require end-users to; elect to become a volunteer, indicate which type of cell phone they currently use and upon receipt of the new cell phone case commence holstering the cell phone in the case wherever they go. As an option and to solicit interest in the program, volunteers could be provided software applications. These applications could potentially access tracking information of the volunteer's phone and the volunteer's family members' phones; or a moving map application could be provided to enable

navigation through the cell phone. Mr. Kimball and Mr. Cumbie have many years' experience developing and distributing code to demanding end users. Both individuals have experience providing Situational Awareness and OFP software to the Air Force Special Operations Command (AFSOC) for all fixed wing Special Operations Forces (SOF) aircraft. Additionally, Mr. Kimball worked for Manheim Auctions, an international organization with a large customer base and participated in the development and distribution of Manheim's software applications.

One method ATPG conceived for fielding the sensor network and implementing its widespread use would be to conduct a pilot program for the nearly 30 million government employees, border patrol personnel and government contractors. These individuals generally work in what would be considered high value target areas. Providing these employees with cell phone cases equipped with the SMD and its sensors would immediately give the sensor network nationwide coverage in many areas that would be likely targets of a terrorist attack. In addition to gaining nationwide coverage; if this pilot program extended to all government employees and its contractors around the world, the network would have the ability to monitor U.S. interests globally.

Costs, Works and Schedule:

The budgeted cost for this development is $1,000,000, with a projected period of performance of one year. ATPG will simultaneously commence four primary tasks upon contract award.

1) ATPG will work with ECBC to evaluate, test and select the most appropriate chemical and biological miniaturized sensors available (4-month effort, $17,137)).

2) ATPG will research and determine the three most commonly used phones capable of being part of this sensor network and work with Otter Box to design and manufacture cell phone cases to house the SMD and sensors (4-month effort, $45,000).

3) ATPG will enhance/scale the software applications to support the potentially large volume sensor network that will comprise the Cell-All ubiquitous system (7-month effort, $500,000).

4) ATPG will restructure and scale down the SMD so it can be accommodated in the cell phone case. After month 7, integration and testing of the Cell-All system will commence. The system will be documented (block diagrams, wiring diagrams, and theory of operation manual) and a demonstration date will be scheduled (12-month effort, $437,863).

Prototype cases housing the SMD and sensors, cell phones and viewer/management software executables will be delivered upon project completion.

Small Business Considerations:

This white paper is submitted from a minority owned small business.

HAROLD P. KIMBALL Jr.

Enabling Technologies, Inc. (ETI), President
Software Functional Manager / Senior Software Developer Support Systems Associates, Inc. (SSAI), Warner Robins, Georgia

Education:

Bachelor of Science in Computer Science, 1990, Mercer University, Macon, Georgia
Associate of Science in Computer Science, 1987, Macon College, Macon, Georgia

Technical Skills:

Machines: PCs, SUN, VAX, Alpha
Operating Environments: UNIX, VMS, MS-DOS, Novell Netware, Windows 95 & NT Software: Sybase, ORACLE, Advantage, FoxPro, Microsoft Word, TBBS bulletin board
Languages: Delphi, SQL, Ada, C, Assembly, Pascal, FoxPro, Pro*C, PL/SQL

Experience and Accomplishments:

- Manager *I* Lead Developer for the Digital Mapping Interface System (DMIS)
- Manager / Lead Developer for the AC-130H Gunship Part Task Trainer (pIT).
- Lead Developer for re-engineered Linux based APG-150 Control Unit, AC-130H Gunship
- Designed and coded software (desktop and web) for the C-141 Parts Application Program Indenture (API).
- Designed and coded a Delphi application to manage the AC-130H Gunship's Electrical Load Analysis (ELA) database.
- Designed and coded software for the Integrated Database. The database which uses SQL Server 7.0 tracks Tech Order production by using Work Breakdown Structures
- Designed and coded the Data Replication module for Tracker plus
- Designed and coded the Create Company and Import modules for Tracker plus
- Designed and coded Delphi applications to monitor, save and decode ML-STD-1553 messages
- Designed and coded a Delphi application to track drawings and the fabrication of assemblies for the C-(4) test bench
- Designed and coded the Operational Flight Program (OFP) for the AC-130H Gunship's re-engineered A VQ-19 L TD/R Control Indicator Unit
- Developed a MIL-STD-1553B application in Delphi to load and verify the Display Generator Unit (DGU) OFP for the AC-130H Gunship
- Developed a Delphi application to capture and analyze MIL-STD-1553B data.
- Developed a Windows based Control Display Unit (CDU) simulator in Delphi for AC-130H Gunship crews

DOUG ERWIN CUMBIE

Enabling Technologies, Inc. (ETI); Computer & Electrical Engineer

Education:

BS, Electrical Engineering, University of West Florida, 2007
BS, Computer Engineering, University of Central Florida, 2001

Job-Related Skills:

- C and C++ programming (Bortand C++ Builder 6).
- C# (MS Visual Studio 200312005 - desktop and mobile devices)
- Java language (Borland JBuilder, JCreator)
- VHDL knowledge, MC68HC11 microcontroller assembly language
- ASP, VBScript, JavaScript, HTML, SOL, MySOL (Macromedia Dreamweaver)
- PSpice (circuit design), LogicWorks (digital circuit design)
- BASIC, OBasic
- DOS, Windows 9812000IXP, Unix
- Embedded systems

Experience and Accomplishments:

- Developed version 3.0 to 5.0 of the Digital Mapping Interface System for Gunships (DMISG) moving map software for AC-130H and AC-130U model gunships.
- Assisted in the development of a moving map software application for a Pocket PC handheld device.
- Software development of the Mil-Std 1553B portion of an AC-130H Navigation and Fire Control Tester computer.
- Developed EEPROM programmer and zymology tester for AC-130H Display Generator Unit
- Software development olathe AC-130H Gunship GPS Trainer
- Assisted in the engineering design and development of the AC-130H Gunship Gun Tester

Independent Projects:

Handheld Wireless GPS Tracking Device: Designed and developed with one team member for undergraduate electrical engineering senior design course. The device consisted of a GPS module, microcontroller, LCD display, and a long-range wireless transceiver integrated into a battery powered, portable handheld unit.
UAV Ground Station: Developed a ground control system for communicating with a remote unmanned aerial vehicle. Project was developed for the ECAAT UAV team of the University of West Florida. The software application utilizes a wireless link to provide a real-time display of the UAV's present position and onboard system information on a laptop computer. Additional features developed and currently in progress include: waypoint uploading and modification, target information upload, and manual override

Appendix VI

Golden's 9,589,439 Patent [the '439 Patent]: Issued Mar. 7, 2017

Based on the alleged facts presented by Plaintiff in the lower court pleadings, this Appellant court can reasonably infer that the Defense Threat Reduction Agency (DTRA) Android Tactical Assault Kit (ATAK) app. that was built on the Google android open-source operating system; the Defense Threat Reduction Agency (DTRA) Apple Tactical Assault Kit (iTAK) app. that was built on the Apple iOS operating system; [T]he Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense (JPEO-CBRND); Draper's Laboratories Inc.'s Chemical, Biological, Radiological, Nuclear, and Explosives Plug-in sensors; the U.S. Army's Nuclear, Biological and Chemical Reconnaissance Vehicle (NBCRV) Stryker platform; and at least the mobile devices of Google, Samsung, LG, Qualcomm, and Apple, are government contractors who collectively manufactured the sensing devices alleged as infringing Golden's patented inventions, "for the benefit of the Department of Defense [DoD]." *See Advanced Software Design Corp.*, 583 F.3d at 1378.

In light of the allegations that the inventions disclosed in patents '189, '439, '287, '619, and '898 were designed to prevent terrorist activity, it is plausible that the government agencies and private entities manufactured the infringing devices for the benefit of the DoD to promote national security. *see, e.g., Hughes Aircraft Co.*, 534 F.2d at 898 (finding that the government's participation in a satellite program was "for the Government," because the program was vital to the military defense and security of the United States).

Moreover, under section 1498(a), "Government authorization or consent" can be implied by circumstances. *See TVI Energy Corp.*, 806 F.2d at 1060. In this case, the Complaint alleges DoD contracted with the government agencies and private entities [listed above and asserted in this case], to develop and commercialize the sensing devices alleged as infringing Golden's patented inventions combinations. This contractual relationship supports a reasonable inference that the Government authorized the manufacture and use of the infringing devices.

Golden's '439 patent illustrates how Golden's patented inventions combinations are grouped together in Claim 1 to form a multi-sensor detection system. The four patented inventions are: a communication device of at least a cell phone, smartphone, etc.; a communication method of at least a CPU; a plurality of sensors [CBR] for sensing humans; and, surveillance sensors mounted in, on, upon at least that of an unmanned aerial vehicle (UAV).

Golden's 9,589,439 Patent ['439 Patent]

Application No: 14/806,988

Claim 1. A multi sensor detection system capable of identifying, monitoring, detecting, and securing those critical areas (e.g., U.S. borders), sites, locations and facilities vulnerable to terrorist activity that can be integrated with and interconnected to watchtowers to form a network, comprising:

at least one of an integrated watchtower, a fixed watchtower, a surveillance watchtower, a watchtower capable of scanning, a watchtower capable of monitoring, a watchtower equipped with sensors or a watchtower interconnected to a central monitoring terminal for sending signals thereto and receiving signals therefrom;

wherein the at least one watchtower is equipped with a remote video surveillance camera that provides at least one night vision means of surveillance or an infrared human detection means of surveillance capability and is integrated into a watchtower's remotely controlled system that can monitor, detect, track, and identify humans;

a communication device of at least one of a mobile communication device, a mobile communication unit, a portable communication device, portable communication equipment, a wired communication device, a wireless communication device, a monitoring site, a monitoring terminal, a web server, a

desktop personal computer (PC), a notebook personal computer (PC), a laptop, a satellite phone, a smart phone, a cell phone, a Universal Mobile Telecommunications System (UMTS) phone, a personal digital assistant (PDA), a liquid crystal display (LCD) monitor, a satellite, or a handheld, interconnected to a monitoring equipment for sending signals thereto and receiving signals therefrom;

a communication method of at least one of a Bluetooth, Wi-Fi, Wi-Max, Internet, Ethernet, Broadband, Network Bandwidth, Wireless, Wired, Text Messaging, Cellular, Satellite, Telematics, Wide Area Network (WAN), Wireless Wide Area Network (WWAN), Local Area Network (LAN), Radio Frequency (RF), Broadband Wireless Access (BWA), Global Positioning System (GPS), or central processing unit (CPU), used to interconnect the communication device to the monitoring equipment for sending signals thereto and receiving signals therefrom;

a plurality of sensors for detecting or sensing humans that is at least one of a chemical human sensor, biological human sensor, radiological human sensor, infrared human detector, motion human detector, or image human detector, interconnected to or disposed within the multi-sensor detection system for sending signals thereto and receiving signals therefrom;

a mobile multi-sensor detection device that is at least one of a ground

surveillance sensor, a surveillance radar sensor, a surveillance camera, or a stand-alone surveillance scanner, that is mounted in, on, or upon at least one of a car, a truck, a camper, a bus, a van, an unmanned aerial vehicle (UAV), an unmanned ground vehicle (UGV), or a utility vehicle, interconnected to the monitoring equipment for sending signals thereto and receiving signals therefrom;

a hand-held multi-sensor detection device that is capable of at least one of thermal imaging or infrared imaging for monitoring, detecting, tracking and identifying humans, that is controlled or operated by at least one authorized person who is an owner, pilot, conductor, captain, drivers of vehicles identified as high security, airport security, police, highway patrol, security guard, military personnel, hazardous material (HAZMAT) personnel, Central Intelligence Agency (CIA), Federal Bureau of Investigation (FBI), Secret Service, port security personnel, border security personnel, first responders, or monitoring site and terminal personnel, interconnected to the monitoring equipment for sending signals thereto and receiving signals therefrom, wherein the authorized person manually initiates the signal to the monitoring equipment to alert upon the monitoring, detecting, tracking and identifying of the human;

whereupon, detection by the mobile multi-sensor detection device causes an automatic signal transmission to be sent to, or received from, any products in

product grouping categories of storage and transportation, sensors, detector case; modified and adapted, monitoring and communication devices, communication methods, biometrics;

whereupon, detection of an unauthorized vehicle, an unauthorized driver or operator of a vehicle or mobile unit, a signal is sent from the communication device to the vehicle or mobile unit to stop, stall or slowdown the vehicle;

wherein, a communication device of at least one of a mobile communication device, a mobile communication unit, a portable communication device, portable communication equipment, a wired communication device, a wireless communication device, a monitoring site, a monitoring terminal, a web server, a desktop PC, a notebook PC, a laptop, a satellite phone, a smart phone, a cell phone, a UMTS phone, a PDA, a LCD monitor, a satellite, or a handheld, interconnected to the monitoring equipment for sending signals thereto and receiving signals therefrom, comprising a lock disabling mechanism that is able to engage (lock), and disengage (unlock) and disable (make unavailable) after a specific number of tries.

2. The multi sensor detection system of claim 1, capable of identifying, monitoring, detecting, and securing those critical areas (e.g., U.S. borders), sites, locations and facilities, further includes the identifying, monitoring, and detecting

of terrorist, that is at least one of an illegal, radical, fanatic, activist, revolutionist or rebel.

3. The multi-sensor detection system of claim 1, further includes a global positioning system (GPS) receiver adapted for communication with at least one satellite.

4. The multi-sensor detection system of claim 1, further includes a navigation system adapted for communication with at least one of the surveillance watchtowers.

5. The multi-sensor detection system of claim 1, capable of forming a wired or wireless sensor network.

6. The multi-sensor detection system of claim 1, capable of forming a mesh network for redundancy.

7. The multi-sensor detection system of claim 1, capable of transmitting identification data, location data, power source data, and sensor data.

8. The multi-sensor detection system of claim 1, capable of being embedded into; placed in, on, or adjacent to at least one of the products in the product

grouping categories or an area targeted for monitoring.

9. The multi-sensor detection system of claim 1, capable of sending signals thereto and receiving signals therefrom to engage (lock), disengage (unlock) and disable (make unavailable) a lock after a specific number of tries that is interconnected to the multi sensor detection system or monitoring equipment.

10. The multi-sensor detection system of claim 1, capable of transmitting biometric and authentication data include, but is not limited to, at least one of fingerprint recognition, voice recognition, face recognition, hand geometry, retina scan, iris scan, heart rate, pulse and signature.

11. The multi-sensor detection system of claim 1, interconnected with a camera to view the environment in real-time or to store the data for transmission and review at a later time.

12. The multi-sensor detection system of claim 1, interconnected with a camera; light and video sensors to allow the user to view the environment from at least one of a cell phone, smart phone, PDA, handheld, laptop, desktop, workstation or monitoring site.

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